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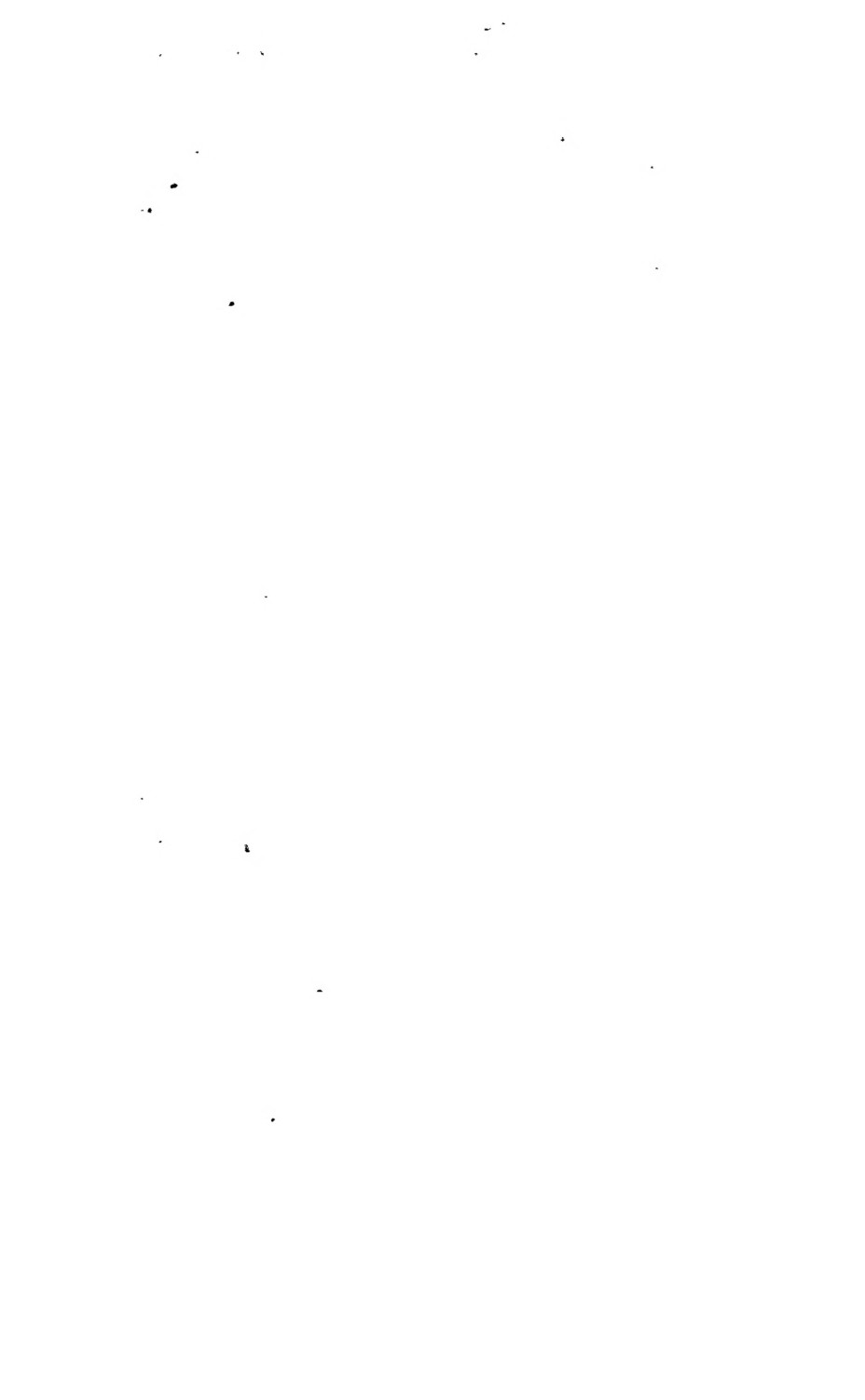
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OF

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THE JOURNAL
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FEBRUARY 10TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

THE minutes of the previous ordinary meeting were read and confirmed.

Elections were announced, viz., Member—THOMAS PLUMPTON TINDALE, Esq., of 50 Sussex Square.

Corresponding Member—TRELAWNEY SAUNDERS, Esq., of the India Office.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

- From the SOCIETY.—Proceedings of the Royal Society. Vol. xxii, No. 148. 8vo.
- From the EDITOR.—La Revue Scientifique. Nos. 28, 29, 30, and 31. 1874. 4to.
- From Prof. A. ECKER.—Archiv für Anthropologie, Sechster Band, Drittes Vierteljahrshft, 1873. 4to.
- From the SOCIETY.—Medizinische Jahrbücher der K. K. Gesellschaft der Ärzte in Wien. Nos. 3 and 4, 1873. 8vo.
- From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. xviii, No. 1. 8vo.
- From A. W. FRANKS, Esq.—Transactions of the International Congress of Prehistoric Archæology for 1868. 8vo.
- From the SOCIETY.—Jahrbuch der K. K. Geologischen Reichsanstalt, vol. xxiii, No. 3; Verhandlungen ditto, Nos. 11, 12, and 13, 1873. 8vo.
- From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. iii, Nos. 7, 8, and 9. 8vo.
- From the EDITOR.—The Food Journal for January 1874. 8vo.
- VOL. IV. B

- From the AUTHOR.—Two Years in Peru. 2 vols. By Consul T. J. Hutchinson, F.R.G.S., etc. 8vo.
- From the EDITOR.—Matériaux pour l'Histoire primitive et naturelle de l'Homme. Vol. iv, Nos. 7, 8, and 9, 1873. 8vo.
- From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Tome viii, fas. 3. 8vo.
- From the AUTHOR.—Thèse pour le doctorat des Sciences Naturelles. Recherches sur les Races Humaines de la France. By M. A. Ronjou.
- From the SOCIETY.—Journal of the Asiatic Society of Bengal. Part 1, No. 2; Part 2, No. 3. Journal ditto, Nos. 5-8, 1873. 8vo.
- From the AUTHOR.—La Province de Smyrne. By M. Charles de Scherzer. 8vo.

FOR THE MUSEUM.

- From Dr. F. DALLY.—Three Flat-head Skulls from Vancouver's Island.

Photographs of Stone and Bronze Implements from Jersey were exhibited by Captain S. P. Oliver, R.A.

The following paper was read by the author:—

EXPLORATIONS *amongst* ANCIENT BURIAL GROUNDS, *chiefly on the* SEA COAST VALLEYS *of* PERU. By T. J. HUTCHINSON, F.R.G.S., F.R.S.L., H.B.M. Consul for Callao. [Second Part.]

BEFORE we proceed North of Lima—to which you have accompanied me in the first part of this paper—I purpose describing the burial places near to Chosica, which is only twenty-nine miles interior to the capital of Peru, and at an elevation of 2750 feet above the level of the sea. This is on the line of the Oroya railroad, intended to join the Pacific and Atlantic Oceans by crossing the Andes, and through the valley of the Amazon.

Not more than from six to eight hundred yards beyond the Chosica station, and behind the house of Senor García, we find a small plateau about twenty feet above the ordinary mule road, and thirty higher than the railway track. This, viewed from either of the roads just mentioned, appears to be covered with a conglomerate mass of stone wall ruins; but on scrambling up, we find it is a city of the dead. All the portions of walls seem shaken—perhaps by earthquakes; and in some places are large quantities of huge stones, tumbled over one another in promiscuous piles. Here and there appears a piece of ledge, or terrace about a yard and a half wide, covered with clay. As Mr. Steer and I get in amongst the stones, we see many holes, showing caves or grave vaults underneath—nearly all of which

have a bone or two, or some other relic of humanity within. Alongside them are flagstones that must have been displaced by human agency. Sounding with our sticks to find a hollow place, Mr. Steer soon removes a loose flagstone and descends—to see skull, arm, and other bones to correspond. Examining a few more—which had been previously rifled—they gave similar results. We then sent to the hotel for pickaxe and shovel, as it was useless to search for helping hands. Mr. Steer continued here from early morning to dinner time, and for two days, “down amongst the dead men.” We offered high wages for assistance—but it was useless. As a general rule, the natives all over South America have a dislike to hard work; and the sentiment is doubled in a case of this kind, because they do not care to have the dead bodies disturbed—more, I am inclined to believe, from superstitious fear than from veneration.

The exploring work of Mr. Steer resulted in the finding of half a dozen bodies, wrapped, packed, and tied up as in the illustration. The interiors of all the vaults, into several of which I could see, were plastered over. They were generally from seven to eight feet long, three to four feet wide, and about four to four and a half feet deep from the top. They all had communication with each other at the bases—in the shape of slits from four to five inches wide, and a foot in height. This arrangement suggested to me a possible belief of the intermingling or intercourse of spirits after death. On unwrapping several of the bodies folded up as you see here, they fell into their separated bones, as if they had been disarticulated on the spot by the power of a magnetic battery. Nearly all the faces were swathed round with cotton flock, surmounted on the top by a bag of coca leaf. Some of the females taken out had their hair plaited as perfectly as if it had been done only the night before.

In every grave, and with each skeleton, was found such things as the following: silver and copper nippers or tweezers, the same as the Indians are known to have used for plucking out hair from eyebrows, jaws, and upper lip. Small combs made of separate teeth, artistically put together, and one of which I have here; beads made of minute pieces of bones covered with red material, supposed to be cinnabar, and most likely intended to simulate coral. Of this red stuff I also got out a small bag. Varieties of coloured cloth—brown, yellow, and red; long shawl-pins made of copper, and having on them thick coats of the sulphate. Nuts, with rattling kernels inside—probably used as talismans. One of these had a small quill about an inch in length protruding from it. Bivalve and univalve shells were here too, of a species unknown to Mr. Steer, although he is an expert concho-

logist. On many of the children's teeth taken out from here were marks of copper that had been put into their mouths; a ball of cotton thread, with several copper needles, was amongst the findings.

About the same distance south of the station, and trending towards Lima, was a somewhat similar structure. The latter, however, was better defined, on a more extensive plateau, and when passing it in the train, somewhat resembled the ruins of houses. Between it and the rail track ran two of the mule roads that cross the Cordilleras, with twenty feet difference of altitude between them. The name of this place is Parara, and it is in the Quebrada or ravine of Yanacota. It occupies only a few thousand square yards of space, and may be defined to be of triangular shape, because it is thrust into what seems a corner, from each side of which the mountain comes out to enclose it. But although the form of architecture is at first sight more regular than that of Chosica it is difficult to imagine it ever was anything but a "city of the dead." There is nothing like a street, or even a narrow passage amongst the boulders, that form walls or constitute enclosures. As we scramble over them for a distance of one or two hundred yards in superficies, we see graves built of stone, one over another for three tiers, the two lower being generally under ground, like those at Chosica; and all having apertures of communication in every tier, such as I have already mentioned of the last named. Here all the graves have been opened and emptied, except of a few bones and skulls. Between these catacombs and the brow of the hill are half a dozen terraces, faced with large stones. On one of these was a square yard of modern brickwork with two ledges, one a foot higher than the other, and showing where the Spaniards had planted a cross. Amongst these ruins was one quadrilateral building, which I supposed to have been a house till I examined it. The walls were eight feet high, as I stood alongside; whilst the building measured twenty-four feet long, and eighteen feet wide. Mounting on the top by where the wall was broken, I observed that it had been a mausoleum, separated into three burial spaces, by divisions of stonework, eighteen inches thick, which went crosswise. At the bottom of each of these were some fragments of bone, and there were two openings of six to eight inches square (two in each), most probably for the same object as that supposed at Chosica. One segment of this interior was still half covered with part of the flag stones that had no doubt originally closed-in all. On the outside of the building, near the top, were projecting eave-stones—a style of architecture never before seen by me in Peru, but Mr. Steer tells me it is frequent in the Moyabamba and Chachapoya valleys of the other side of the Andes.

The only sign of anything suggesting life here was in a considerable number of grinding stones, scattered about amongst the ruins. As it is more than probable the place derives its name from these—the term *Parara*, we are told by Professor Forbes,* signifying stone for grinding corn, in the Aymara language—I am induced to have a little cogitation.

From page 52 of the Professor's paper just alluded to I make the following extracts :—

“Here I may remark that not only have the peculiarities of the country inhabited by the Aymara Indians determined to a great extent the nature of their nourishment, but particularly those of altitude and climate have also exercised a great influence upon the methods found necessary to be employed for the culinary preparation and conservation of many of the articles of food.

“Owing to the great elevation which this part of South America has above the mean level of the sea, it follows that the atmospheric pressure is greatly diminished, and consequently that the temperature of water when boiling is very much lower or, in other words, less hot than on the coast—in fact, so much so that several ordinary articles of consumption cannot be thoroughly cooked even by prolonged boiling with water in an ordinary open pot. For this reason, the dry small beans, which elsewhere in South America are almost everywhere the favourite and one of the principal articles of food, especially of the lower classes, for the reason that they cannot be thoroughly boiled in the whole state, are not used in any quantity, and are always first ground to fine powder before being cooked. Peas have to be treated in a similar manner, as also the dry maize or Indian corn; so that before every hut there is always seen an Indian grinding apparatus, “*parara*” (it cannot be called a mill), which only consists of two rough stones, the lower being a heavy one fixed in the ground, with a flat smooth surface upwards, whilst the other is a semicircular piece, which is rocked in seesaw fashion by the Indian women, so as to crush up the substance placed beneath it.”

I give this, because in the first part of the paper just quoted, we are told “the whole of the Aymara country is situated at a great elevation, and may be looked on as an extensive table land, having a minimum elevation of 10,000 feet;” and because finding here a burial ground, as I believe it, of the Aymara tribe at a height of only 2750 feet above the sea level, I cannot

* “On the Aymara Indians of Bolivia and Peru.” By David Forbes, Esq., F.R.S., F.G.S., and read June 21st, 1870, before the Ethnological Society of London, and published in the Quarterly Journal of that Society, vol. ii, No. 3, October 1870.

account for all of these grinding stones being brought from the high lands to be buried with the dead.

On the lower of the mule roads already mentioned, there is one large grinding stone several tons in weight, that never could have been carried across the Cordilleras. In these graves, however, I found the bodies as they are described by Professor Forbes, to be interred by the Aymaras, namely, "the position of the body in the tomb (*chulpa* or *huaca*) or grave was also that which the infant had originally occupied in its mother's womb, the knees being drawn up to the chin, and the arms placed cross-wise over the breast—the whole usually sewed in a kind of sack, generally made of a species of grass (*ichu*) or of reeds (*Totora*) sewn together."

At Ancon and Pacha-Camac, the sewing up in this *Totora* is the invariable rule, and I hope soon to have one of these to show to the members of the Institute.

Out of one grave here at Parara, that had not been completely emptied, I got a few skulls, together with part of a sandal, that might have belonged to a belle of the period. Even these skulls I should not have brought away—for doubts might have been expressed of their not having been Indians, as possibly of their being Spaniards—but the evidence of cotton flock rolled round the faces prove that they are the right sort.

On the opposite side of the river Rimac, which flows through the valley of Chosica, within a stone's throw of the station house, and about half a mile lower down than Parara, I visited another of these ruined gatherings. This is called Cocha-huakra; and although I had not time to explore it, I saw that in parts the accumulation of boulders here was literally honey-combed with such graves as I find on the opposite side. All through this valley, as from Lima up to Coca-Chacra, a distance of 32 miles (and where, according to Senor Don Manuel Pardo, the existing President, the valley of the Rimac is terminated), the doings of earthquakes in past times are visible from the enormous masses of stone that are scattered about, as well as from the rents in the towering Cordilleras, through the rugged ravines of which the traveller is obliged to pass.

It was on the line of this Oroya railroad, at a place called Campas, that was picked up the flattened skull, here amongst my illustrations. Campas, I may add, is 12,000 feet above the level of the sea. It is of such that Professor Forbes writes about in his paper already quoted:*

"The extraordinary elongated skulls (many of which have been received in Europe and have been frequently figured as well as described) which are met with in the ancient graves on

* *Op. cit.*, pp. 12 and 13.

the islands in the Lake Titicaca, in the Aymara country, have been described and regarded by Tschudi as natural and peculiar to what he calls the Titicaca or Inca race. As before mentioned, the Inca or Quechua race cannot be correctly termed a Titicaca race, since the entire shores of Lake Titicaca have even from pre-Incarial times been solely inhabited by the Aymaras, although subsequently conquered by the Incas. Elongated skulls are not confined to this district, or even entitled to be considered natural productions; if the evidence to prove their artificial origin is allowed due weight, the partial or total obliteration of the sutures in all those skulls which I examined must be regarded as so many proofs of the application of compression in infancy; and Bolivians who have disinterred them assure me that in the same graves (family or tribal burial grounds) many other skulls of the usual form were always found along with them, and that the general opinion was that these elongated skulls belonged to the families of chieftains, amongst whom it was considered a mark of distinction to so distort the head (of the male only) in childhood."

Besides the proofs from "*Ordinanzas del Peru*," which the Professor adduces of Dr. Tschudi's error in stating there was no evidence to show that such practice of compressing the head was usual amongst the ancient Peruvians, we have the testimony of Senor Antonio Raimondi, who thus describes it: * "*The Conibos (who are neighbours of the Campas) have peculiar characteristics amongst them. With others they have the barbarous custom of flattening the heads of their children with two small pieces of thin board—one of which is applied to the forehead and the other behind, in such a manner that the front of the head is pushed down, and the head is enlarged posteriorly—resembling the skulls, that are sometimes turned out of the burial grounds (or Huacas) of the Sierras. In the mission of the Sarayaco, I had the opportunity of seeing a child, which its mother had brought to be baptised, and which, besides having the head enlarged behind, had, at the same time, a rounded projection on the frontal bone—the latter being much depressed outside the prominence [as may be seen in the Campas skull here illustrated]. Not understanding how a projection could be developed in a skull flattened by a board, I asked the mother if the board used to flatten the child's head were a smooth surface, and she answered me that there was a considerable sized hole in it. Thus can be easily explained the protuberance in question—the cranium having become developed*

* "*Apuntes sobre la Provincia Litoral de Loreto por Antonio Raymondi, Professor de la Facultad de Medicina en Lima, 1862,*" page 120.

in the part corresponding to the hole, from finding itself not compressed there by the flat board."

So that what existed in the time of the Incas, and perhaps many centuries before, as proved by the excavations from Huacas, was seen by Senor Ramondi less than twenty years ago in this artificial deformity of skulls. That gentlemen does not, however, tell us if he made any inquiry as to the *rationale*—if such a term can be used in the case—of this barbaric custom.

From Lima, going northwards along the sea shore—by Ancon, Pasamayo, and Chancay; all of which are between the first named and Huacho—the traveller in the land journey gets over a ground that might almost be considered a cemetery for the whole world, if he had not previously visited other parts of Peru. Neither at Ancon, Pasamayo, or Chancay do we find the orthodox Huaca burial mound, or building of any kind in connection with sepulture, except the graves which are mentioned in Professor Busk's paper,* in connection with the skulls I sent last year to the Anthropological Institute. Of these there are as already mentioned, three classes—only one of which may be entitled a built grave. This is in the form of an inverted funnel, and is lined with stones inside. At Ancon I have walked and ridden over a sand desert of ten to twelve miles square—in every part of which were either bodies exposed, bones bleaching, or graves opened.

The double wonder that strikes me here, as in other parts of Peru, consists in the question which I have not been able to solve—where did these multitudes live when they were in the flesh and upon the earth (as there exist here no vestiges of human habitations), and who were the persons who buried them with so much care? For even in these rough graves the bodies are rolled up with cotton flock and cloth outside, then enveloped in a case of the *Totoru* reed. Fishing nets, with weaving needles, and pottery are likewise put in the graves.

Ancon, a short time ago—indeed its palmy days were in 1871—was made the favourite bathing place of the late President Balta. The few thousand soldiers he always kept here, often used to go Huaca-hunting, as it is termed, and invariably on moonlight nights. In many parts of Peru the people never attempt to search for anything in the Huacas unless during full moon. At all other times they believe hidden treasures sink too deep into the ground. The soldiers of President Balta, in their zeal for gold, silver, or pottery, did not think it worth while to restore the

* *Vide* Proceedings of Anthropological Institute, April 1st, 1873, or Appendix A, in Author's "Two Years in Peru." Sampson Low and Co. 1874.

bodies back to their graves after they had turned them out; for with the searchers for treasure it is believed that all such is deposited under the corpses. Thus, having unrolled the swathings, and whether they found anything or not, it was considered no harm with men who had no ideas of sacrilege to leave the dead scattered about. I have been told of some valuable gold treasures having been found at Ancon, and I know of a considerable amount of pre-historic crockery ware being excavated there. The Ancon pottery resembles that of the next locale, Pasamayo, and both are of an inferior quality to what is obtained further northward, as well as that from Canete described in my previous paper.

Professor Busk (in his Memoir already referred to by me), commenting on the hoof of a mule, sent amongst the things from Ancon, remarked: "It could only have been introduced by the Spaniards at the time of the conquest, or by Peruvians at later dates, when searching for treasure."* This appears to me a question not yet fully decided. For I observe in a Report made by the Reverend Father Woolf to the Government of Ecuador—the neighbouring republic of Peru—that there are extensive fossil remains of the Tertiary and Quaternary epochs on the coast of Manobi and near to Punin. Besides the Mastodon, the fossil horse is found, proving that in pre-historic times such animals existed in that part of South America, although they became extinct, and the present race of horses was doubtless introduced by the Spaniards.

The burial ground of Pasamayo—ten miles further on than that of Ancon—can only be recognised in its true character by the quantities of skulls and bones that are lying about. It is situated chiefly on the face of a sea-cliff, which rises by an inland slope to a summit of about four to five hundred feet above the level of the sea. In fact, the railway from Ancon to Chancay is all built on the front of such a slope, from which the loose sand is constantly trickling down, as regularly as in an hour glass. Near to the Pasamayo station the railway track runs through the graves, and the white bones, with skulls, extend from the sea beach to the top of the hill. Here I obtained pottery of shape, pattern, and material similar to that at Ancon, skulls with the frontal suture open, and teeth stained with the copper obolus as in Pacha-Cámac. The same wonder as to where the people lived, and who brought their dead bodies to be buried here, is generated as was at Ancon. They could not have fallen in battle, as I have heard it suggested, for if they did they must needs

* Proceedings of Anthropological Institute, before alluded to, or page 310 of vol. ii of "Two Years in Peru." London: Sampson Low, Marston, & Co. 1874.

lack the trappings of grief and respect, which are characteristic of every grave.

Five miles further on, at Chancay, no mounds exist more than at Ancon and Pasamayo; although in the neighbourhood are extensive burying grounds like those already described. The country from this to Huacho, a distance of about thirty miles, has similar graveyards in every valley. At Huacho the large mounds called Huacas again commence, and continue several hundred miles up the coast—to the knowledge of my personal exploration as far as Chatuna—four miles north of Lambayeque. Of some products of these mounds at Huacho, specimens of art in feather helmets, lent to me by Senor Raimondi, with native spun cloth, are wonderful things. Dr. Tschudi records his having passed six weeks in Huacho, but tells us nothing about such as these.

From Huacho northward by Supe, Guarmey (or Huallmi), Casma, Samanco, Chimbote, the Guanape Islands, Huanchaco (for Chan-Chan, the capital of the Chimoo territory, long before the time of the Incas), the Macabee Islands, Pacasmayo, Eten, Pimentel, and San José, the Port of Lambayeque,—wherever I went, it was the same in burial fashions, in works of art disinterred, and in architecture, of which we have but the shadow—everywhere we find the persistence of type, such as Professor Busk identified in their skulls.

At Chan-Chan, to which you enter by the port of Huanchaco, was the capital of the old Chimoo kingdom. Near to this city Pizarro founded Trujillo, which takes its name from the conqueror's birthplace in Spain. These specimens of pottery ware, and this silver work of art, were taken out of burial grounds at Chan-Chan. They were given to me by Mr. Blackwood, who was British Vice-Consul there, and a gentleman of long experience, as well as high standing. It may be observed that the face on this water jug is symbolic of that serpent worship about which our associate, Mr. Harrison, has written so exhaustively. The silver badge, with a cross and twelve dots transversely, is of a similar model to that got at Ica (mentioned in my former paper). This may remind us not only of the multiples of twelve in the architecture of the Huatica Valley, but might suggest a knowledge of the Zodiac before the vaunted time of the Incas. Of valuable excavations at Chan-Chan I saw proof in copy of a paper from the municipal archives at Trujillo, detailing minutiae of the worth of 4,450,784 golden dollars taken out of a Huaca there, that had been annexed by a Senor Toledo, in the year 1577. This, when the King of Spain's royal fifths were deducted, consisting of 985,953 gold dollars and a few reals, left Senor Toledo the tidy sum of 3,464,830 dollars of the precious metal. Yet

this gold must have been hidden there ages before the Incas were known in Peru.

At Talambo, up the Pacasmayo railroad (which is a branch of the direct line to Cajamarea), I obtained from a native gentleman, Senor Salcedo y Ruiz, some excellent specimens of pottery ware excavated in his neighbourhood. They were from a locality called Huaval. Out of the same explorations were procured agricultural and other implements, of which I here present illustrative photographs, the originals not having yet arrived. When passing through Chiclayo I was presented with somewhat similar implements by Mr. Hindle, C.E. In fact, as far as I went—to the old fortress of Chatuna, about two leagues north of San José, in lat. 6 deg. 40 min. S.—I found the same types as at Arica in lat. 18 deg. 23 min. S.—along a coast distance exceeding 1,200 miles,—not only in the skulls, which I leave to Professor Busk, and to Dr. Barnard Davis, but in the clothing, the architecture of houses as well as graves, the pottery ware, and the works of art disinterred from the burial grounds.

I am, therefore, inclined to believe that the ancient Peruvians, whose remains we are discussing here to-night, were of a race very much anterior, not only to the Incas, but to the Yuncas, of whose subjugation we are told so much by the Spanish historians. But before it is possible to get all the information that can still be gathered, it seems to me indispensable to have made with the mounds in Peru a far more searching investigation than has hitherto been attempted. "The mounds and their contents," observes the eminent North American archæologist, M. Squier, "as disclosed by the mattock and the spade, serve to reflect light more particularly upon their customs, and the conditions of the arts amongst the nations who built them. Within these mounds we must look for the only authentic remains of their builders. They are the principal depositories of ancient art, and hide from the profane gaze of invading races the altars of the ancient people."

I believe, therefore, it is only by searching out the works of art in these mounds, and tabooing the idea of "profane gaze" amongst the world of scientific explorers, who come not to "invade altars," or attempt any sentimental nonsense of that kind, but to enlighten the history of these pre-historic ages, we may be able to glean some glimmer, however feeble, on two points that impressed me during my inquiries.

1st. That no implements of warfare except the sling were found in all my excavations. Of these having been extensively used we have proofs in the many skulls with perforations.

2nd. That no small amount of the pottery ware exhibited on the accompanying illustrations, and to all of which I can bear

testimony of its having been excavated in Peruvian territory, bears an exact resemblance to that excavated by Dr. Henry Schliemann from the ruins of Homer's Ilium.

DISCUSSION.

Sir DUNCAN GIBB remarked that the author quoted a sentence from Mr. Forbes's work, to the effect that owing to barometric pressure at certain high elevations in the localities stated, boiling water would not readily boil vegetables, and that great difficulty was experienced in having them properly cooked. As Mr. Forbes himself was present, he would like to have an explanation of this, as it struck him forcibly that mere barometric pressure alone could scarcely account for the difficulty in properly boiling vegetable aliments, as the temperature of the boiling water would necessarily be still 212 degs. Could there not have been some of the salts of lime in the water which thus impaired its properties when brought to the boiling point, more especially as the vegetables had to be reduced to a state of fine division to get boiled, and then even with unsatisfactory results.

Senor G. DE LA ROSA pointed out that the language, architecture, and art of the Chimu race, if not precisely *pre-historic*, were *older* than those of the Incas. He considered that the student of Peruvian ethnology would find much valuable information in the archaeological remains, but he would greatly err in neglecting the study of the early historians. There is no reason to suppose that they deliberately altered the Indian traditions. Although Garcilaso and Cieza speak too frequently of "the devil", it would be a mistake to discredit *on this ground* all their statements. It must be remembered that they lived *three hundred years ago*.

The PRESIDENT referred to the fact mentioned by Mr. D. Forbes that, in some parts of Peru, elongated deformed skulls of the Titi-caca type were found mixed with brachycephalic ones at the sea-level, although it would appear the latter largely predominated. In the numerous collections made by Mr. Consul Hutchinson in the burial-grounds in the neighbourhood of Callao and Lima, it would, however, appear, that not a single instance, so far as the President was aware, had been noticed of the occurrence of an elongated deformed skull amongst brachycephalic crania collected by that gentleman. A circumstance, which he thought might be regarded as in some degree confirmatory of the opinion that the two races practising such opposite modes of deformation were really quite distinct, those of the long form belonging more especially to higher altitudes, and the latter to the lower country towards the sea coasts. The intermixture of the two forms in some places merely indicated a certain amount of intercourse between the two races. In reply to a remark that had fallen from a member, the President stated that so far as his observations had gone, the process of deformation, at least of the flattening kind, had no tendency to cause an early closing of the sutures of the skull. And with reference to a hint that had fallen from the author of the

paper, he explained that the equine hoof that had been found amongst the skulls sent by Mr. Consul Hutchinson was undoubtedly that of a mule, and not of any species of true horse. And consequently that it was quite certain that the animal had been introduced since the epoch of the Spanish invasion.

Mr. Consul HUTCHINSON, in reply said, with reference to the question put as to whether any of the corpses disinterred by him were with their faces turned to the east, as implying Inca worship, that he found no corroboration of this idea; in fact, his experience led him to disbelieve nearly all the stories told him about the Incas, which he regretted to believe were no more than fables. In his recently published work, "Two Years in Peru", which he had that evening the pleasure of presenting to the Institute, would be found the proofs he adduced of what he saw. He had shown many of the skulls and other materials taken out by him to the late Professor Agassiz when that eminent man visited Callao, and the Professor stated his belief of the impossibility of fixing the age of these things. But added that he entertained no doubt of all belonging to an age very far anterior to the time of the Incas. The author further showed how the ancient Spanish writers, from Polo de Ondegardo, and Garcilasso de la Vega, had stated as facts many things which every day's investigation was pointing out to be the grossest of fictions. The work of Don Pedro Cieza de Leon, which as a labour was a wonderful production, showed in a recent translation of its first part by Mr. Markham, that many chapters were unfit for translation, and probably from its indecency not reliable. Part of this author's work, that had been lost, was recently discovered by one of their illustrious Peruvian members who was here present, Senor Don Gonzales de la Rosa, to have been published under the name of another Spanish author, Sarmiento—one of those who are so often quoted by Prescott. This was an act of misappropriation not unfrequent amongst Spanish writers, as he himself was a victim to a like proceeding in his second work on Africa—when the Governor's Secretary at Fernando Po copied and translated from "Impressions of Western Africa" more than three-fourths of a pamphlet published in Madrid by order of the Queen of Spain. This, too, without any acknowledgment. In fact, he believed the Inca delusion to be one well worthy of further investigation. Although Mr. Forbes had mentioned bows and arrows found at Arica, the only implements discovered by the author were slings, and of these evidences could be seen in some of the skulls on the table. The Bosina, or shell-trumpet, referred to by Colonel Lane Fox, seemed to him to be different from those spoken of as brought from the Marquesas island, inasmuch as the Peruvian ones were encircled by a neat leather work almost as fine as lace. He concluded by informing the meeting that all the things exhibited there, as well as five cases on their way to England, would soon be placed *in situ* for exhibition at the Bethnal Green Museum.

Mr. FRANKS, Mr. FORBES, Colonel FOX, Mr. TOPLEY, and Mr. TYLER, also joined in the discussion.

Mr. A. W. FRANKS read a paper by Mr. TYRWHITT DRAKE, with additional remarks by himself on Skulls and Implements from Palestine.

NOTE on COLLECTION of FLINTS and SKULLS brought from PALESTINE. By C. F. TYRWHITT DRAKE, F.R.G.S. of the Palestine Exploration Fund Survey. [With Plate i.]

SOME details relating to the collection of flint flakes, scrapers, etc., now exhibited, will be found in a memoir by Captain R. F. Burton in the "Journal of the Anthropological Institute", vol. i, p. 339, and those obtained by Captain Burton are described by Mr. Evans in the same volume, p. 342, and engraved, in three plates, in "Unexplored Syria", vol. ii, p. 289.

The entire collection, which I purchased from l'Abbé Morétain, consists of nearly three hundred and fifty flakes and scrapers of various forms, of which a large number are polished on one side from use, while others are more or less serrated. In addition to these are ten perforated circular discs of stone and one of pottery. The use of these objects is very doubtful; but I may mention one purpose to which they are still put in some of the South-Sea Islands, as I was informed by Mr. A. Franks, who kindly showed me one so fitted up in the Christy Collection. A disc rests on a knot midway down a string dependent from the roof and supporting a basket or bag of food. Marauding rats, descending the string, find a very insecure foothold on the disc, and speedily retreat.

With the flints, or at all events in the same series of caves—for I am unable to speak more precisely, as the Abbé Morétain kept no record of the position in which the different objects were found—two bronze celts, several flint balls about the size of an orange, one short stone roller, three crushing mills, two basins (broken) of black basalt, one pestle and mortar, some sharks' teeth, and other fossils; a few recent horses' teeth, as well as a large quantity of pottery, chiefly Roman in type, were found. This pottery is of many forms; very few pieces are at all archaic in texture or style. The greater number consist of large four-handled amphoræ, of conical pots not unlike those used by modern English gardeners to force rhubarb and seakale, of flattish trays, and of small jars of various shapes, standing from four to ten inches high; to this lot may be added a few lamps, without inscriptions, of Roman type. Several split bones were found, but unluckily were not deemed worthy of preservation. Two bone awls, however, and a small broken needle were secured.

In addition to this miscellaneous collection, and as if to destroy all hopes of any clue to the date of the occupation of the

caves, a large number of coins were found, *chiefly*, I believe, in the adjacent garden. These consist of one small coin of Herod the Great, one of a Procurator of Augustus, several Roman and many with Arabic and Coptic inscriptions, and lastly, many undecipherable; some mediæval, and a few pieces cut off Spanish dollars.

In one of the large amphoræ about a pint and a half of bones were found, which a superficial examination showed me to belong chiefly, if not entirely, to small rodents (field and shrew-mice). The most probable reason that suggests itself to me to account for such a quantity of bones is that the animals fell into the open jar and were then unable to extricate themselves.

With regard to the skulls, I may premise that many are of quite recent date, and that few, if any, of the evidently older and more fragmentary specimens belong originally to the rock-hewn tombs in which they were found. An unopened tomb is a *trouvaille* that I have never yet been lucky enough to find in Palestine. Indeed, considering the prevalent form of cave tomb with conspicuous doorway, it is impossible that it should be otherwise. Hopes of finding treasures, or mere inquisitiveness, have thoroughly investigated all the loculi. In some cases I have found Mohammedan burials in them, but these are generally of strangers who die in the country, or of travellers who are murdered. Instances of the latter are very common near Athlét (Castellum Peregrinorum of the Crusaders) and the neighbouring villages of Sarafend and Kefr Lam (skulls, Nos. 12 to 18 inclusive). In some of the caves of this district I found as many as twelve, and even fifteen skeletons together.

Nos. 4 and 5 are from Iksal near Nazareth, and are also modern; they were found in a bivaulted loculus. This form of tomb is to be found from Aleppo to Jerusalem.

No. 21 was found lying on the floor of a roughly hewn cave at 'Ain Sinia, over the door of which is a rude inscription in square Hebrew giving the name of the person buried or of the owner of the tomb. Inside the skull I found the three appended olive stones, which recall the peach and date stones found by Captain Burton at Palmyra, and by the same traveller and myself at Shakka in the Hauran. In this cave I found also fragments of broken bones and of red pottery.

Mr. A. W. FRANKS communicated the following observations on the objects exhibited by Mr. Tyrwhitt Drake:—

It may be well to bear in mind that the plate of flints which illustrates Captain Burton's paper in the "Journal of the Institute", vol. i, pl. xiv, does not represent the implements from Bethlehem, but some specimens from Mount Lebanon collected by M. Louis Lartet, and described in the same volume, p. 422.

On comparing the specimens now exhibited, it will be seen that the types do not vary greatly from those engraved in Burton and Drake's "Unexplored Syria", vol. ii, p. 299, and described by Mr. Evans in our journal.

The objects collected by the Abbé Morétain are of very various dates and origin, and unfortunately he has not taken any pains to distinguish the various localities from which they were obtained. Some observations on the subject have been recently published by M. Louis Lartet, "*Matériaux pour l'histoire de l'homme*", 1873, p. 178, which it may be as well to reproduce. They are as follows:—

"Enfin, dans la Judée elle-même, M. l'Abbé Morétain, curé de Bethsaour (Village des Pasteurs), près de Bethléem, avait depuis longtemps réuni chez lui, parmi d'autres curiosités, des silex taillés, recueillis aux environs de sa résidence par les Arabes. M. de Saulcy rapporta le premier en France quelques spécimens de ces silex que l'on peut voir au Musée de Louvre. Ils sont, ainsi que la plupart de ceux que nous avons observés nous-mêmes chez l'Abbé Morétain, taillés suivant le type *couteau*; mais nous avons vu chez M. le comte de Vogué un instrument de silex discoïde, qui se rapproche beaucoup de certaines types paléolithiques de l'Europe, et peut avoir servi aux mêmes usages que les haches du diluvium.

"Outre les couteaux de silex mentionnés plus haut nous avons remarqué dans la collection de M. l'Abbé Morétain, lors de notre passage à Bethsaour, une aiguille d'os percée d'un chas, et une pointe de flèche d'os du même type que celles qui ont été trouvées dans la grotte sépulcrale d'Aurignac. Il y avait encore d'autres objets, tels que boulets de pierre, meules de basalte, etc., qui doivent appartenir à des époques beaucoup plus récentes. Malheureusement les circonstances de gisement de ces pierres taillées n'ont pas été étudiées avec assez de soin. L'Abbé Morétain nous avoua que c'étaient les Arabes qui les recueillaient à la surface de leurs champs et les lui apportaient, et que le seul gisement qu'il en connût se trouvait dans les grottes artificielles du voisinage remplies d'accumulations de terres meubles. Nous avons visité ces grottes et étudié leur contenu, et nous doutons fort que ce soit le gisement originel des silex taillés de l'Abbé Morétain. Ils peuvent y avoir été introduits par un remplissage postérieur. Cependant un archéologue qui, dans ces derniers temps, est allé à Bethsaour, M. Arcelin, n'a pas hésité dans un article consacré aux gisements de l'âge de la pierre dans cette localité* à les classer en deux

* "*Matériaux pour servir à l'histoire de l'Homme.*" 5e année, 1869, p. 239. Nous avons déjà donné avant M. Arcelin, et à deux reprises différentes, des détails sur ce gisement de silex taillés (Bull. de la Soc. Geol., 2e série, 1865,

catégories : les *éboulis des pentes* et les *grottes et abris sous roche*. Nous ne pouvons accepter dès à présent la précision que les derniers de ces termes tendraient à établir à l'égard de ces gisements, si on leur donnait la signification qu'ils ont en France dans nos districts troglodytiques ; quant au premier terme, il a l'avantage de ne rien compromettre, en laissant un vaste champ ouvert aux conjectures.

“ Les grottes des environs de Bethsaour, qui seraient, d'après l'Abbé Morétain et M. Arcelin, l'un des gisements normaux de ces silex, sont, comme nous l'avons dit, remplies de terres meubles, au milieu desquelles on recueille des fragments de silex et des tessons de poterie. Le duc de Luynes y avait ramassé une terre cuite qui paraissait avoir été faite au tour, et ne devait, sans doute, point dater de la même époque que les silex taillés, ou même que les poteries *néolithiques* (?) que M. Arcelin y aurait trouvées. Ces grottes sont d'ailleurs, autant qu'il m'en souvient, taillées au pic au milieu des assises crétacées. C'est dans ces conditions que se présentent les nombreuses grottes explorées par M. Rey dans la Judée même, et auxquelles cet archéologue a pu assigner, d'après les textes sacrés, une date historique.*

“ Tout en réservant donc la question de gisement, qui ne paraît pas être encore bien éclaircie, on peut dire que les silex ouvrés et les ossements travaillés à Bethsaour font croire à l'existence, dans cette localité, d'une station humaine correspondant à un état de civilisation semblable à celui de nos anciens chasseurs de Renne du Périgord et des Pyrénées. Il est bien vrai que les mêmes nécessités ont pu conduire, à des époques très-différentes, des races diverses à utiliser les mêmes matériaux ; mais ces nécessités communes ne suffisent pas pour expliquer la similitude des formes typiques, pour ainsi dire conventionnelles.

“ Dès lors, on serait tenté d'admettre qu'un lien de traditions communes, ou des relations de contemporanéité ont pu exister entre les hommes qui ont semé ces mêmes débris d'une industrie primitive en Palestine et dans l'Europe occidentale.”

The two Celts mentioned by Mr. Tyrwhitt Drake are represented in the accompanying plate (Plate i). The larger one is somewhat bent in use, and resembles the simple Irish type. It is certainly of pure copper, and the other may be of the same metal ; but this can only be determined by analysis.

t. xxii, pp. 544-4). “ Congrès International d'Anthropologie et d'Archéologie Préhistoriques ” [de Paris, 1867], p. 115, M. de Vogüé avait présenté au même congrès d'intéressantes observations sur la même sujet, p. 113. Enfin, en 1867, M. Cazalis de Fondouce a fourni encore sur cette question de nouveaux renseignements (Matériaux, etc., 1867, p. 460).

* M. Rey a étudié avec soin ces habitations troglodytiques de la Judée, et il s'appuie sur saint Jérôme pour établir leur date historique. Robinson avait décrit celles de Beir Djibrin.

DISCUSSION.

The PRESIDENT remarked that the skulls exhibited did not appear to possess much interest; the majority being obviously of no great antiquity and of diverse forms. One presents a distinctly negro character, and the rest are clearly of mixed and uncertain lineage. One among them was remarkable, however, as a pathological specimen. It exhibited, in the parietal region, the cicatrices, as they might be termed, of two circular openings nearly as large as a half crown; one of which had become entirely closed by bone, and the other very nearly so. They were injuries that, from the form of the cicatrix, might be supposed to have been produced by spherical bullets of some kind, but the interior of the skull presented little or no mark of the injury except in the small central perforation in one of the cicatrices.

The meeting then separated.

FEBRUARY 24TH, 1874.

SIR DUNCAN GIBB, Bart., M.D., *in the Chair.*

The minutes of the previous Meeting were read and confirmed.

The following list of presents was read, and the thanks of the meeting were voted to the respective donors.

FOR THE LIBRARY.

- From the AUTHOR.—The Early History of Mankind; Primitive Culture, 2 vols. By E. Burnet Tylor, F.R.S.
- From the INSTITUTION.—Smithsonian Miscellaneous Collections. Vol. x. Report of the Smithsonian Institute, 1871.
- From the UNITED STATES GOVERNMENT.—Report of the United States Geological Survey, 1872. By E. F. Hayden.
- From the SOCIETY.—Zeitschrift für Ethnologie, fünft jahrgang. 1873.
- From the EDITOR.—Revue Scientifique. Nos. 32, 33 and 34. 1874.
- From the SOCIETY.—Proceedings of the Royal Society. Vol. xxii, No. 149.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. xvii, No. 73; Lectures addressed to Officers of Volunteer Corps at the, ditto.
- From the ASSOCIATION.—Journal of the East India Association. Vol. vii, No. 3.
- From the ROYAL ACADEMY OF SCIENCE, AMSTERDAM.—Verslagen en Mededeelingen, Afd. Natuurk. Del vii, 2e rks. Jaarboek, 1872. Processen Verbaal, 1872-3.
- From the EDITOR.—Cosmos di Guido Cora. Vol. i, No. 6.
- From the EDITOR.—Nature (to date).
- From the ANTHROPOLOGICAL SOCIETY OF SPAIN.—Revista de Antropologia. No. 1, 1874.



FLINT SAWS.

50. Antenn.

The following paper was read by the author:—

A peculiar NEOLITHIC IMPLEMENT from ANTRIM. By J. SINCLAIR HOLDEN, M.D., F.G.S., M.A.I. [With Plate ii.]

THE variously fashioned stone implements of prehistoric man, from the rudest to the most highly finished, are all of the greatest interest, as furnishing not only reliable evidences of his existence, but also giving an insight into his mode of life, habits, and intelligence.

That an identity of form, springing from an identity of want and not of race, should mark many implements is not to be wondered at, hence some are found world wide; the ruder they are the slighter is the variation, while among the more highly worked and polished implements of a later period there is a wider field for variety, as the lithic art improved. It is quite possible that conflicting opinions may have run high in primitive communities as to the merits and demerits of barbed or plain arrow-heads, just as now we argue about breech and muzzle-loading guns. Under the stimulus of necessity a new invention would occasionally break in upon the routine of imitation, and the knowledge of the implement thus originated might never travel beyond the limit of some isolated tribe. This would seem to be the case with the early dwellers in that part of the north-east of Ireland called the Glens of Antrim, as here alone, as far as I can ascertain, has been found the flint implement which forms the subject of this paper.

My opinion that it is local and rare is confirmed by its absence from the collections of stone implements in all of our museums which I have had the pleasure of examining, except a few imperfect specimens in the Christy collection, and another imperfect one, in the Blackmore collection at Salisbury, but evidently not recognised by that excellent authority, Mr. Stevens, as in his catalogue he describes it as "a much-worn scraper from Ireland." Other writers make no mention of it, and Mr. John Evans, in his recent standard work on flint implements, states that saw flakes do not occur in Ireland (p. 266).

I became acquainted with this flint implement, which I call a *saw*, while exploring a tumulus near Larne, finding two of them (the first, I believe, so discovered). They were lying along with fragments of sepulchral urns and ashes. Shortly afterwards, in January 1870, the most complete find was made by the Earl of Antrim and myself while examining a series of dolmens called "giant's graves" which occur in the glens of Antrim. In one of these, along with urn fragments and other flint implements, we found thirteen flint saws, six of them most perfect, the others worn and broken. In structure, this peculiar stone implement

bears the usual characters of a well-selected flat flint flake, has in all cases the bulb and facette of percussion, rarely chipped sides. At the thinnest part of the margin, opposite the bulb, a portion is detached, leaving a semicircular depression about an inch wide by half an inch deep. The edge of the curve is bevelled and finely serrated, so as to form a very good sharp-cutting instrument when semi-rotated. (See diagram.)

As to the purpose for which this carefully manufactured implement was applied, several may be suggested.

1st. As being used in some religious rite, like circumcision. This is not very probable. The people who employed them, with the exception of this worked flint, do not differ in the many other records they have left us from the race dwelling in Ireland at that period—identical lithic structures, modes of interment, urn ornamentation and weapons, are everywhere found, and it is not likely that they would have instituted for themselves a new sacred ceremony.

2nd. That they were the first process of working flint flakes into arrow-heads. If this were the case, they ought to be as universal as arrow-heads. The latter, when found incomplete, do sometimes look very like imperfect saws; but we have only to examine a perfect specimen to see that a very different tool was intended to be fashioned.

3rd. As scrapers to smooth arrow-shafts. This is a more feasible conjecture, and an art which might have been confined to one locality, only unfortunately the instrument is much too delicate for this purpose, the teeth breaking even in the gentlest trials I have made, so that if they were used for scraping they would be found broken and worn in the centre of the curve, instead of which it is one of the ends which suffers most, and is fractured, as would occur if used for sawing.

Lastly. As saws. When taken in the hand its natural use seems to be that of sawing, with a semi-rotatory motion, not with the object of dividing, but of notching anything round like stick or bone. This is its evident use, and so employed would prove an effectual implement in marking tallies, or in notching arrow-shafts for tying on barbs or feathers.

In calling this interesting implement a flint saw, I believe I give it the proper name due to it, and as such it deserves a place among our genuine neolithic implements.

The Director read the following papers for the author :

On the "BEOTHUCS," a TRIBE of RED INDIANS, SUPPOSED to be EXTINCT, WHICH FORMERLY INHABITED NEWFOUNDLAND. BY T. G. B. LLOYD, C.E., F.G.S., M.A.I. [With Plate iii.]

The accounts given of the Aborigines of Newfoundland, or Beothucs, as they styled themselves, by the early navigators who visited the island, are brief, and without especial interest. John and Sebastian Cabot, the discoverers of the island, in 1497, during the reign of Henry VII, in speaking of the savages of St. John's Island, which is situated close to the mainland on the N. W. coast of Newfoundland, say, "the inhabitants of this island (St. John's), use the skins and furs of wild beasts for garments, which they hold in as high estimation as we do our finest clothes. In war they use bows and arrows, spears, darts, clubs, and slings."

"In the 14th year of the king, three men were brought from Newfoundland, who were clothed in the skins of beasts, did eat raw flesh, and spoke a language which no man could understand; their demeanour being more like that of brute beasts than men; they were kept by the king for some considerable time, and I saw two of them about two years afterwards in the Palace of Westminster, habited like Englishmen, and not to be distinguished from Englishmen, until I was told who they were." (Kerr's Travels, vol. vi, p. 3-10.)

In 1534 Jacques Cartier met with some of the Indians in the district of Carpool, near the extreme N.E. point of the coast of Newfoundland, of whom he speaks in the following terms: "These are men of indifferent good stature and bigness, but wild and unruly. They wear their hair tied on the top like a wreath of hay, and put a wooden pin in it, or any other such thing, instead of a nail, and with them they bind certain birds' feathers; they are clothed with wild beasts' skins, as well the men as the women, but the women go somewhat straighter and closer in their garments than the men do, with their waists girded. They paint themselves with certain roan colours. Their boats are made of the bark of birch trees, with the which they fish, and take great store of seals, and as far as we could understand, since our coming hither, that is not their habitation, but they come from the main land out of hotter countries, to catch the said seals, and other necessities for their living." (Hakluyt, vol. iii, p. 252).

The next account of the Indians is given by Captain Richard Whitbourne, in his voyages to Newfoundland, about the year 1615, which is as follows: "The natural inhabitants of the country, as they are but few in number, so are they a some-

what rude and savage people, having neither knowledge of God, nor living under any kind of civil government. They live altogether in the north and west part of the country, which is seldom frequented by the English; but the French and Biscaines report them to be an ingenious and tractable people (*being well used*). They are ready to assist them, with great labour and patience, in the killing and cutting up and boiling of whales and making train oil, without expectation of other reward than a little bread, or some such small hire. . . .

These savages secretly come every year into Trinity Bay and Harbour, in the night time, purposely to steal sails, lines, hatchets, hooks, knives, and such like." (Purchas, vol. iv, p. 1884.)

In the rare and curious work by the same author, entitled "A discourse, containing a loving invitation, both honourable and profitable, to all such as shall adventure, either in person or purse, for the advancement of his Majesty's most hopeful plantation, in the Newfoundland, lately undertaken" (1622), we find additional information concerning the natives of the island. "They have great store of red ochre, which they use to colour their bodies, bows and arrows, and canoes, which are built in shape like the wherries on the river Thames, but that they are much longer, made with the rinds of birch trees, which they sew very artificially and close together, and overlay every seam with turpentine; and in like manner they sew the rinds of spruce trees, round and deep in proportion, like a brass kettle, to boil their meat in, which hath been well proved by three mariners of a ship riding at anchor by me, who being robbed in the night of their apparel and divers provisions, did the next day seek after them, and came suddenly where they had set up three tents, and were feasting, having the canoes by them, and had three pots made of such rinds of trees, standing each of them on three stems, boiling, with fowls in each of them, every fowl as big as a pigeon, and some so big as a duck. They had also many such pots so fowld and fashioned, like the leather buckets that are used for quenching fire, and were full of the yolks of eggs, that they had taken and boiled hard, and so dried small, which the savages used in their broth; they had great store of the skins of deer, bettners, bears, seals, otters, and divers other fine skins, which were well dressed; as also great store of several goots of flesh dried; and by shooting off a musket towards them, they all ran away naked, without any apparel, but only their hats on their heads, which were made of seals' skins, in fashion like our hats."

We now come to a remarkably interesting narrative of an expedition, undertaken in the year 1768 by John Cartwright, Captain, which is entitled "Remarks on the Situation of the Red Indians of Newfoundland, with some account of their

manner of living, together with such descriptions as are necessary to the explanation of the sketch of the country they inhabit, *taken on the spot.*"

The original manuscript, which, I believe, has never been printed, is now in the possession of the Protestant Bishop of Newfoundland. Through the kindness of the Rev. Mr. Pilot, of St. John's, Newfoundland, I was enabled to transcribe as much of the document as would serve my purpose. The author was, if we can judge from his writings, a man of no ordinary powers of observation. His minute, and apparently accurate, descriptions of facts, conveyed in clear and forcible language, bear the impress of truth, but as his chief object was to enlist the sympathies of the British Government, against the horrible barbarities which were being practised on the comparatively defenceless Indians by the *mean whites* of the island, he occasionally degenerates into a somewhat maudlin style of sentimentality, and indulges in moral reflections. I cannot, however, do better than follow his descriptions of the Indians, their habitations, implements of the chase, and other particulars of their mode of life, leaving out his poetical imaginings as to how they may have spent their time during the long and dreary winters of these latitudes.

In so doing, I shall take Cartwright's account as the basis of the following remarks, supplementing it by any evidence, corroborative or otherwise, I may be able to bring forward both from the accounts of others and from my own observations. I may here remark, that I am much indebted to the kindness of Mr. John Peyton, of Toulouquet Island, who was intimately associated, in his early days, with the Red Indians, for much valuable information concerning them. My thanks are also due to Mr. Whiteway, of St. John's, Newfoundland, for the loan of a vocabulary of the Red Indian language; to my friend Mr. Murray, F.G.S., for a photograph of R. J., and to others, who have kindly assisted me in my inquiries.

The epithet of "Red Indian" is given to the savages of Newfoundland from their universal custom of colouring their garments, canoes, bows and arrows, and every other utensil belonging to them, with red ochre,* obtained by them from Red Ochre Island, Conception Bay. Although they are the original inhabitants of a country we have so long been in possession of, they have not now the least intercourse with us whatever, except indeed the unfriendly one of reciprocal injuries and murders. There are traditions amongst the English inhabitants

* According to the testimony of Mr. Peyton, they anointed their bodies with a mixture of red ochre and deer's fat, which during the summer season must have formed a good protection against the flies which infest the island, and rendered them less sensitive to the effects of heat and cold.

of Newfoundland which prove that an amicable intercourse once subsisted between them and the natives, and at the same time afford sufficient evidence that the conduct of the savages was not the cause that broke those social bonds.

A reference is here made by Cartwright to a sketch plan of the location of the Indian dwellings, deer fences, and sewels, and to a sketch of their bow and arrow, both of which were unfortunately missing from his manuscript.

The Wigwam is a hut in the form of a cone, the base of which is proportional to the number of the family, and their beds form a circle around the fire that burns in the centre. The beds are only so many oblong hollows in the earth, lined with the tender branches of fir (balsam) and pine (white). Several straight sticks, like hop-poles, compose the frame of the wigwam, the covering of which is supplied by the rind of the birch tree. This is overlaid, sheet upon sheet, in the manner of tiles, and perfectly shelters the whole apartment, except the fireplace, over which there is left an opening to carry off the smoke. The birch rind is secured in its place by outside poles, whose weight, from their inclined position, is sufficient for that purpose. The central fire, spreading its heat on all sides, makes them quite warm, and notwithstanding one of these habitations, where materials and labour are plentiful, may be completed in less than an hour, yet they are extremely durable, as is evidenced by the fact that during the last few years Mr. A. Murray, F.G.S., Provincial Geologist, saw some of them standing near Red Indian Lake which must at least have been from thirty to forty years old. Of the *square habitations* only two were observed, one upon "Sabbath Point," in "Lieutenant's Lake," and the other at a small distance from "Little Rattle."* They were much alike, and on examining the latter we found it to be of the form of a rectangle, framed nearly in the fashion of the English fishing houses, only that the studs were somewhat apart, from which it is evident that they could not form the shell, as in the English buildings, where they are closely joined together. But about eighteen inches within this, and parallel to it, there was another frame of slighter workmanship rising to the roof. From the hair adhering to the studs the interval appeared to have been filled up with deers' skins, than which there could have been nothing better calculated for keeping out the cold. This was the construction of only three sides, the fourth being raised by trees, well squared, and placed horizontally, one upon another, having their seams caulked with

* It is to be regretted that the names given to places on the island by their discoverers, should have been subsequently changed by later explorers, as it is impossible to identify many of those mentioned by Cartwright and others, by reference to the chart.

moss. The difference was probably owing to a deficiency in skins, and the rather so as this inferior side of the dwelling bore a south-east aspect, which required less shelter than any other. The lodgments of the rafters on the beams and the necessary joints were as neatly executed as in the houses commonly occupied by our fishermen. The roof was of the form of a low pyramid, being encompassed at a distance of three feet from its vertex by a hoop tied to the rafters with thongs (as I have myself seen in the ordinary conical wigwams of the Micmacs of Newfoundland). There the covering had terminated, and the space above the hoop had been left open, as in the wigwam, for a passage to the smoke, the fireplace, according to custom, having been in the centre. Mr. Peyton and Mr. Curtis, of Salmonier, informed me that the savages also constructed buildings for storing venison. In this connection it may be noticed that our Micmac Indian, Reuben Souleau, gave me an account of a circular wall of stones about seven feet in diameter and four feet high, situated on the side of Birchy Lake, on the Main Brook, which commanded an uninterrupted view both up and down stream. It is supposed to have been built by the Red Indians for a look-out place.

The Deer Fences which we found erected on the banks of the River "Exploits" are situated in places the most proper for intercepting the herds of "Cariboo" deer as they cross the river in their route to the southward on the approach of winter, and again at the return of mild weather, when they wander back to the northward. They have the best effect where there is a beach of about twenty feet wide and from that a steep ascending bank. Along the ridge of this bank the Indians fell the trees without chopping the trunks quite asunder, taking care that they fall parallel with the river, and guiding every fresh cut tree so as to coincide with and fall upon the last. The weak parts of the fence are filled up and strengthened with branches and limbs of other trees, secured occasionally by large stakes and bindings; in fact, these fences and our plashed hedges are formed on the same principle, differing only in their magnitude. They are raised to the height of six, eight, or ten feet, as the place may require, that, the steepness of the bank considered, they are not to be forced or overleapt by the largest deer. Those fences near "Slaughter's" and "Fatal" Islands and the other most frequented places are from half a mile to half a league in length, only discontinued here and there for short distances, where trees suitable for the purpose are not found.* At certain convenient

* I have been informed that some of the deer fences were as much as thirty miles in length, one of which is marked on a map of the island as extending in a direction about east and west.

stations they have small half-moon breastworks, called by the furriers *gazes*, over which it may be presumed they shoot the deer passing between the water-side and the bank, deterred by the “sewels” and disabled by means of the fence from entering the wood until an opening clear of these obstructions may present itself. Mr. Peyton stated that on the opposite side of the river they constructed a fence about two or three miles long, which was opposite to the lead of the long fence, to prevent the deer from ascending the bank. An opening was left in the long fence to allow the deer to pass through it into the water. This arrangement was probably carried into effect in places where the height and steepness of the bank were not sufficiently great.

The “*Sewels*” are made by tying a tassel of birch bark, formed like the wing of a paper kite, to the small end of a slight stick about six feet in length. These sticks are pricked into the ground about ten or twelve yards apart, and so much sloping that the pendent rind may hang clear of its support, in order to play with every breath of wind, and thus cause the deer to shun the place where it stands.* I have myself seen the remains of a deer fence on the north-west end of Grand Pond, consisting of a line of poles stuck into the ground in the manner above described, and, judging from the appearance of the tops of the sticks, it seemed probable that the cuts in them had been made with a steel axe, a circumstance which was accounted for by one of our Indian guides by his saying that “his people” had told him they had planted fresh stakes in places. There is, however, no doubt that the Red Indians occasionally obtained steel axes, which they stole from the fishermen and others.

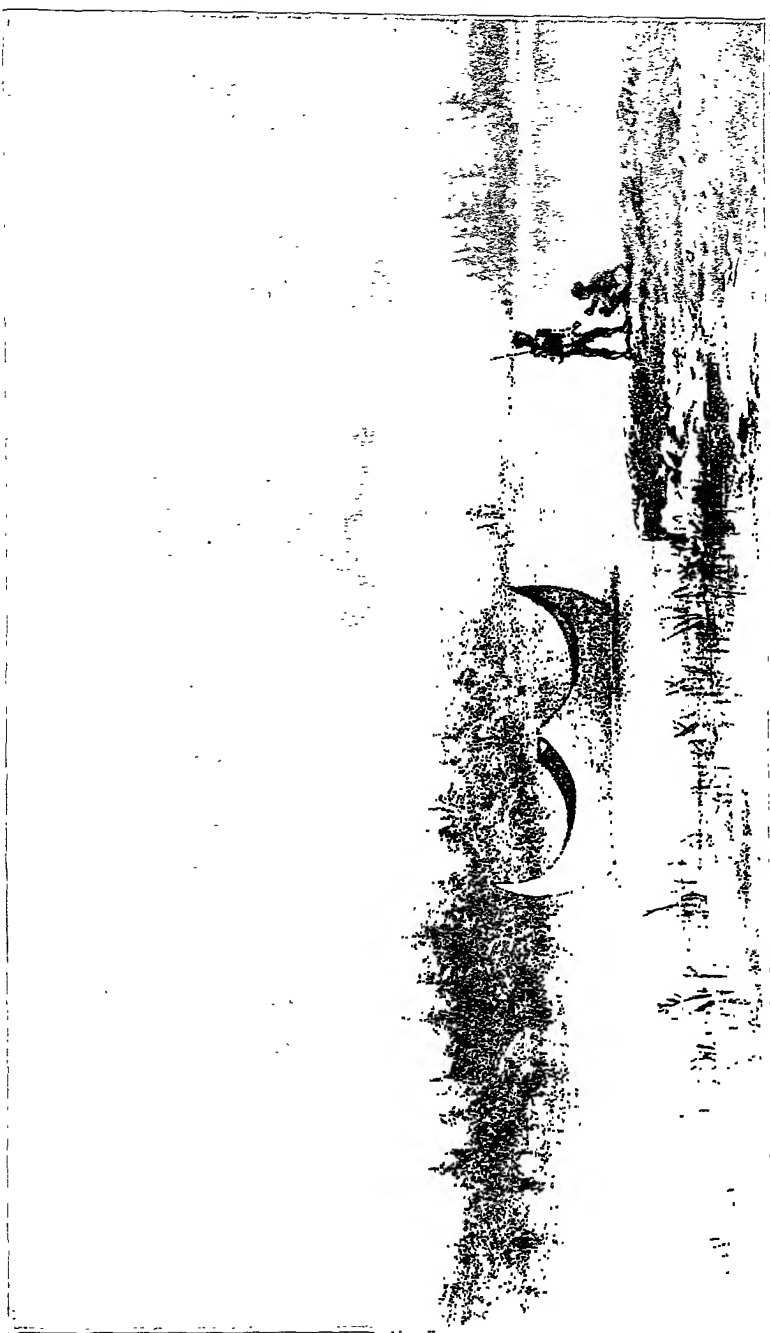
The *Canoe* (plate iii) peculiar to these Indians comes next to be considered. The principle on which the Red Indian’s† canoe is constructed is perhaps nowhere else to be met with. It has in a way no bottom at all, the side beginning at the very keel, and from thence running up in a straight line to the edge or gunwale.

* Virgil, in his “*Georgics*,” 3rd, 371, alludes to the practice of frightening deer by means of coloured feathers, in the following lines :—

“*Hos non immissis canibus, non cassibus ullis,
Puniceæve agitant pavidos formidine pennæ ;*”

which are thus translated by Conington : “No need of letting in dogs on them, hunting them with nets, or scaring them with the terror of the crimson feather.” Dryden has neglected the peculiar beauty of the passage by using only the general word “toils,” which gives no idea of a sewel formed with coloured feathers (see v. 572).

† The Micmac Indians of Newfoundland use skins instead of birch bark in the manufacture of their canoes.



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BIRCH BARK CANOE, - BEOTHUES

A transverse section of it at any part whatever makes an acute angle, only that it is not sharpened to a perfect angular point, but is somewhat rounded to take in the slight rod which serves by way of a keel. This rod is thickest in the middle (being in that part about the size of the handle of a common hatchet), tapering each way, and terminating with the slender curved extremities of the canoe. The form of the keel will, then, it is evident, be the same with the outline of the longitudinal section, which, when represented on paper, is nearly, if not exactly, the half of an ellipse, longitudinally divided. Having thus drawn the keel, whose two ends become also similar stems to the canoe, the side may easily be completed after this manner; perpendicular to the middle of the keel, and at two-thirds the height of its extremities, make a point; between this central and the extreme points, describe each way a Catenarian arch, with a free curve, and you will have the form of the side, as well as a section of the canoe, for their difference is so very slight as not to be discernible by the eye, which will be clearly comprehended on recollecting that the side, as I before said, begins at the keel. The coat, or shell, of the canoe is made of the largest and fairest sheets of birch bark that can be procured, its form being nothing more than two sides joined together, where the keel is to be introduced. It is very easily sewn together entire. The sewing is perfectly neat, and performed with spruce roots, split to the proper size. The portion along the gunwale is like our neatest basket-work. The seams are payed over with a sort of gum, which appears to be a preparation of turpentine, oil, and red ochre, which effectually resists all the effects of the water. The sides are kept apart, and their proper distance preserved, by means of a thwart of about the thickness of two fingers, whose ends are looped on the rising points above mentioned in the middle of the gunwale.* The extension caused when this thwart is introduced, lessens in some degree the length of the canoe by drawing in still more its curling ends; it also fixes the extreme breadth in the middle, which is requisite in a vessel having similar stems, and intended for advancing with either of them foremost, as occasion may require, and by bulging out their sides gives them a perceptible convexity, much more beautiful than their first form. The gunwales are made with tapering sticks, two on each side, the thick ends of which meet on the rising points of the main thwart, and, being moulded to the shape of the canoe, their smaller ends terminate with those of

* According to Mr. Peyton, the "spreader" or "thwart" was taken out when circumstances required, to enable the canoe to be folded up like a cocked hat; but I fear that such a proceeding would, by cracking the gum, have opened the seams of the birch bark, and thus have made the canoe leaky.

the keel rod in the extremities of each stem. On the outside of the proper gunwales, with which they exactly correspond, and connected with them by a few thongs, are also false gunwales, fixed there for the purpose of fenders. The inside is lined entirely with sticks, or ribs, two or three inches broad, cut flat and thin, and placed lengthwise, over which again others are crossed, which, being bent in the middle, extend up each side to the gunwale, where they are secured, serving as timbers. A shut thwart near each end, to prevent the canoe from twisting or being bulged more open than proper, makes it complete. It may readily be conceived, from its form and light fabric, that, being put into the water, it would lie flat on one side, with the keel and gunwale both at the surface, but, being ballasted with stones, it settles down to a proper depth in the water, and then swims upright, when a covering of sods and moss being laid on the stones, the Indians kneel on them, and manage the canoe with paddles. In fine weather they sometimes set a sail on a very slight mast, fastened to the middle thwart, but this is a practice for which their delicate and unsteady barks are by no means calculated. A canoe about fourteen feet long is about four feet wide in the middle.

The *Bows* are all of sycamore, which, being very scarce in this country, and the only wood it produces that is fit for this use, becomes very valuable. Mr. Peyton informed me that their bows were roughly made out of mountain ash or dogwood; they were formed by splitting the piece of wood selected for the purpose down the middle, the rounded side of which formed the back of the bow.* The sticks are not selected with any great nicety, some of them being knotty and of a very rude appearance, but they show a considerable amount of constructive skill.

Except in the grasp, the inside of them is cut flat, but so obliquely and with so much art that the string will vibrate in a direction coinciding directly with the thicker edge of the bow. The bow is fully five and a half feet long. The string was made of deer's sinews.

The *Arrow* is made of well-seasoned pine (white) or sycamore, slender, light, and perfectly straight. Its head is a two-edged lance, about six inches long, made of iron taken from the traps, and other objects of that metal, which they had stolen from the furriers and fishermen. Cartwright says, in his journal of a residence in Labrador, that the head (of the arrow) is a barbed lance, six inches long, made out of an old nail, let into a cleft in the top of the shaft, and secured there by a thread of deer's

* I had in my possession a bow which I took from a Micmac wigwam on Grand Pond; it is made of ash, and of the description used by the Micmacs for shooting ptarmigan, "sweet small deer," when gunpowder is scarce.

sinew. The stock is about three feet in length ; like the famous arrow that pierced the heart of Douglas, it is feathered with the "grey goose wing." They also used the feathers of the "gripp" (or sea eagle) on their arrows.

The country which the Red Indians now inhabit is chiefly about the River "Exploits," extending northwards as far as Cape John and to Cape Frehel on the south-east. They were formerly known to have spread themselves much farther, but it is thought they were then considerably more numerous than they are at present. In the winter, it seems, they reside chiefly on the banks of the "Exploits," where they are able to procure a plentiful subsistence, as appeared by the abundance of horns and bones which lay scattered about their wigwams at the deer fences. The course of the river lies directly across the regular and constant track of the deer, a circumstance which must necessarily ensure to them a plentiful supply of venison. In summer they live altogether, it is apprehended, on the sea coast. Between the boundaries already mentioned is spread out a vast multitude of islands, abounding with sea fowl, ptarmigan, hares (*Lepus Arcticus*), and other game, besides seals in great number. On the largest of these islands are deer, foxes, bears, and others.* Besides hunting all these, they used formerly to kill considerable quantities of salmon in the rivers and small streams, but the English have only left them in possession of two small brooks. During the egg season they are supposed to feed luxuriously. A kind of cake, made with eggs and baked in the sun, and a sort of pudding, stuffed in gut and composed of seals' fat, livers, eggs, and other ingredients, have been found about their wigwams, and are preserved by them, it is thought, against times of scarcity, and when the chase may happen to fail. The author then, in a fit of virtuous indignation, goes on to relate several stories of the inhuman barbarities perpetrated by the English fishermen on the poor Indians, from which we can gather that the patent of nobility ordinarily assumed to belong to the savage was not, at least in the cases mentioned, infringed upon by the dastardly "whites."

These Indians are not only secluded from any communication with Europeans, but they are as effectually cut off from the society of every other Indian people.† The "Canadians" (by whom I conclude the author means the Micmacs, who originally

* Relics of the Red Indians, such as arrows, paddles, etc., have been found on the "Funks," an island situated about thirty miles N.E. from the nearest mainland.

† Mr. Peyton gave me to understand that they were perfectly well acquainted with the "mountaineer" Indians of Labrador, whom they called Shōudāmñk, or "good Indians," in contradistinction to the Micmacs, to whom they gave the name Shōnäck, or "bad Indians."

came from Cape Breton) range in strong numbers along the western coast of Newfoundland, between whom and these natives there reigns so mortal an enmity that they never meet but a bloody conflict ensues. This is the only tribe than can now approach them, for the English settlements on the coast keep back the Esquimos, who are said to have formerly ranged far enough to the southward to have fallen in with Red Indian canoes, and it is understood that they then treated all they met as enemies. The Esquimos, in harassing them, kept to their own element, the water, where their superior canoes and missile weapons, provided for killing whales, made them terrible enemies to encounter. To complete their wretched condition, circumstances have denied them the services and companionship of the faithful dog. This strange statement was confirmed by Mr. J. Peyton. During their sojourn in the spring on the sea coast and islands already spoken of they are obliged to observe all the vigilance of war. So inconsiderable are they in point of numbers, and subject to such an extreme dread of fire-arms, that they are ever on the defensive.

Between "Flut Rattle" and "Rangers' River" the banks of the "Exploits" bear marks of being well inhabited when the Indians resort thither from the sea coasts. The author, after stating his reasons for discrediting the statements of others in regard to the probable number of the Indians living on the island as under estimated, gives an opinion that there were living at that time about 450 souls.

It appears strange that Cartwright does not allude in his narrative to the general appearance, dress, and other characteristics of the Indians themselves, especially when it is borne in mind that one of the chief objects he had in view during his expedition was to surprise, if possible, one or more of the savages, for the purpose of effecting in time a friendly intercourse with them, in order to promote their civilisation, and render them in the end useful subjects of his Majesty. But the reason why he did not succeed in "interviewing" them may have been due to the fact that his excursion into the interior was made during the fall of the year, when the Indians had hardly yet returned from their summer's sojourn on the coast. How did he, then, obtain such an intimate knowledge of their canoes and weapons of war and the chase? It does not appear probable that they would have left such necessary equipments behind them—at least, for a long period of time. However, in an earlier part of his manuscript he observes that: "Even to gain a sight of them is a matter of no small difficulty. . This fact is known to every one who has much traversed these islands, as the traces of Indians are found by such persons wherever they land, and sometimes

such fresh signs of them as are proof that they have not quitted the spot many minutes, and, although these appearances are observable every day, yet whole seasons pass sometimes without an Indian being seen by them."

In Bonnycastle's "Newfoundland in 1842" it is stated that some half-breeds of part Esquimo blood were much alarmed in the year 1831 by the sudden appearance in the Bay of Seven Islands, Labrador,* of a fierce-looking people amongst them, of whom they had no knowledge or tradition, and who were totally unlike the warlike mountaineers of the interior. The strangers seemed to be equally struck with fear, for they disappeared as suddenly as they came.

During a short stay in Labrador last fall, where I was searching for Indian relics, I was informed that about half a century ago a tribe of Red Indians was living near Battle Harbour, Labrador, opposite the island of Belleisle, which committed depredations on the fishermen. A story is told of the Indians having on one occasion cut off the heads of two white children, which they stuck on poles. But no mention is made of them in Cartwright's journal of a residence of nearly sixteen years on the coast of Labrador, published in 1792, in which he speaks of the neighbourhood of Battle Harbour.

Between the years 1760-1827 several attempts were made to open up communications with the Indians, which only resulted in the deaths of several of the parties concerned and in the capture of two women, one of whom was afterwards named Mary March, whose husband, a man said to have been six feet high, was murdered on the spot. In 1823 three other women gave themselves up, being then in a starving condition. One of them, named Shawnadithit, died of a pulmonary disease in a hospital at St. John's, Newfoundland, after enjoying six years of civilised life. Her portrait is described as showing a pleasing but not handsome countenance, not unlike in expression those of the Canadian tribes—a round face with prominent cheek-bones, somewhat sunken eyes, and small nose. A small lock of her hair in my possession is of a black colour. In 1827 M. Cormack set out, under the auspices of the Beothuc Society of St. John's, across the country from east to west, in search of the Red Indians. He was, however, unsuccessful in his endeavours to meet with them.

After describing the various remains of their wigwams, etc., such as have already been described in this paper, he thus goes on to give a description of their burial places: "The most interesting objects of all were their graves, if they can be so called.

* The Bay of Seven Islands is situated near the junction of the River St. Lawrence, with its affluent, the "Moisie," west of the Island of Anticosti.

They were differently constructed, according to the rank, it is presumed, of the persons entombed. One of them was shaped like a hut or cottage, ten feet by eight or nine feet, and four or five feet high in the ridge. It was floored with square poles, and the roof was covered with bark, and every part of it was well secured from the weather and the attacks of wild beasts. In it were found the bodies of two full-grown people, laid at length on the carefully-constructed floor, and wrapped in skins. In the same depository was a white deal coffin containing a skeleton, neatly enshrouded in white muslin—the remains, in short, of Mary March. A variety of articles were deposited along with the bodies, representations of the property or the property itself of the deceased in their lifetime, viz.: Two small wooden images of a male and female child, several small models of canoes, two small models of boats, an iron axe, a bow and quiver of arrows; they were placed by the side of the body supposed to be that of Mary March's husband; two 'fire-stones' or nodules of iron pyrites lay at its head, such as were used by the Red Indians for producing fire by striking two pieces of the substance together. There were also many cooking utensils made of birch bark and ornamented."

Another mode of disposing of the dead was similar to that of the Western Indians of the sources of the Mississippi. The body was wrapped in birch bark, and, with the property, placed on a scaffold formed of four posts, which supported a staging made of small squared beams laid close together. Again, the body was sometimes bent up, wrapped in birch bark, and enclosed in a sort of strong box of squared timbers, which were laid on each other horizontally, and notched at the corners somewhat like the ordinary cribwork of North America; its dimensions four feet by three feet by two feet six inches. It was well lined with birch bark, and in it the corpse was laid on its right side.*

The most common method of interment was that of placing the body in a wrapping of birch bark and covering it well with a pile of stones, if such it can be called. But sometimes it was put a foot or more under the surface of the ground before the stones were placed on it, and in one place, where the ground was sandy and soft, the graves were deeper, and on them no stones were placed. The Indians had their cemeteries on the sea coast at particularly chosen spots, to which they were in the habit of bringing their dead from great distances. The women thus entombed appeared only to have their clothes with them, as no property was found with their bodies.

* Hinds, in his "Explorations of Labrador," vol. i, page 170, says the Montagnais and Nasquapees bury their dead like the Swampy Crees. The body is placed on its side, but sometimes in a sitting posture.

My Micmac guide assured me that the Red Indians used to place their dead on scaffolds, but that he had never met with any of their graves. Mr. Curtis, of Salmonier, told me he once discovered a body in a sort of "rock shelter," called the "sugar loaf," covered with birch bark. Mr. Peyton's account confirmed the above statements of Cormack regarding the common mode of burial adopted by the Beothucs and the locating of their "Dii et Penates" along with their dead.

The information I possess relative to the physical characteristics of the "Beothics" is, I am sorry to say, confined to a few remarks thereon, jotted down during a single conversation with Mr. Peyton, and to my own superficial examination of the reputed "Red Indian skull" which is represented in the photograph. It appears that the men were of an ordinary stature, say five feet ten inches. The shape of the heads of the males and females did not differ in appearance from those of ordinary Europeans. Their eyes, which did not present any marked peculiarity of form like those of the Esquimos, were black and piercing. The men and women wore their black hair long; the former allowed it to fall over their faces. Their complexions were of a lighter colour than those of the Micmacs; in fact, in their countenances they resembled Spaniards. Their dress consisted of two dressed deerskins, which were thrown over their shoulders. Sometimes they wore sleeves of the same material, but never anything else as a covering. On their feet they wore rough mocassins of deer-skin. The skull above mentioned has the following history attached to it. Some years ago Mr. Peyton, of Tuillim Gate, presented the skull of a Red Indian (woman?) to the Athenæum at St. John's, Newfoundland, from which place it was transferred along with other Indian remains to the museum of the Geological Survey.

The implements and utensils which have been found in various parts of Newfoundland consist chiefly of mortar-shaped vessels, spear and arrow heads, gouges, and rude axes. They have been fashioned out of stones of various degrees of hardness and durability. Commencing with the objects shown in the photograph, the first specimen, on the left-hand side of the picture is an oblong hollow vessel of soft magnesian stone, the upper edges of which are about five inches in length, whilst the lower ones form a square of three and a half feet in the sides. Three of the sides are vertical, the remaining one sloping inwards, so as to reduce the base to the size given above. The block of stone has been hollowed out to a depth of two inches. At its lower left-hand corner is seen a shallow groove, which apparently served as a spout. (Locality unknown.)

Two arrow-heads of a hard blueish grey cherty stone, from Fox Harbour, Random Sound.

Human skull, previously mentioned.

Flat axe-shaped tool of felsite slate, of a whitish colour (locality unknown, but supposed by Mr. Murray to have been found in Newfoundland).

Arrow or spear head of soft felsite slate. (Codroy River.)

Finely-worked and highly-polished gouge-shaped implement of chert, nine and a half inches in length, from Bonavista Bay.

SPECIMENS ON THE TABLE.

No. 1. A portion of a roughly-made, gouge-like tool of clay slate, from Hall's Bay.

No. 2. Rudely-formed spear or arrow head of a soft red laminated clay slate, from Toulinguet Island.

No. 3. A chip or flake of quartzite, from Northern Arm, Bay of Exploits.

No. 4. Chip of quartzite, from the shore of "Grand Pond."

Part of a lock of hair, presented to M. Cormack by the Indian woman, Shawnadithit.

Tooth of Red Indian woman, taken from the jaw by Mr. Goff, of St. John's, Newfoundland.

The rough sketches, drawn to twice their natural size, show the outlines of several implements belonging to Captain Knight, of St. John's, who obtained them from Hall's Bay.

A. A. A. Arrow heads of quartzite.

B. Arrow or spear head of the same material as No. 2. It has a slight ridge running down the centre of the blade.

c. (c). Rudely-shaped axes, ground smooth on the cutting edges. c is of chert; (c) is of grey slate.

d. Egg-shaped plummet or sinker, made of steatite, with three shallow grooves cut in it for the reception of a cord.

The mortar-shaped vessel may have been used in the preparation of the egg cakes and pemmican already described. Had it been used for mixing the paint made of red ochre and deer's fat I imagine that traces of the colour of the first-named ingredient would have remained on the stone.

I have not been able to distinguish the arrow-heads from the spear-heads in all cases, because the mere question of size appeared to me an insufficient criterion to judge by when the different kinds of game which were pursued by the Red Indians were taken into consideration.

Mr. Thomas Peyton told me that the gouge-shaped tools were used by the Beothucs for dressing skins, a statement I am disinclined to believe, as implements of such a shape would be ill-

adapted for the purpose, although it does not appear clear to what other use they may have been applied, because there is at present no evidence to show that the Red Indians used "dug-outs," or hewed their timber in such a manner as to require a tool of a gouge-shaped form. I was informed that stone pipes had been found on the island; but Mr. Peyton stated that he never had any knowledge of their using tobacco or any other narcotic, nor had he ever seen any pipes belonging to them.

The two axes marked c. (c) are of the same type as those I have from Jefferson county, New York. The egg-shaped stone was used, I should imagine, as a sinker to a fishing line, because from its small size and the lightness of its material it would scarcely be serviceable as a weight for a net. The chips of quartzite, Nos. 3 and 4, and the arrow-heads A. A, are interesting from the fact that I procured some beautiful specimens of arrow-heads of the same material from the coast of Labrador during an exploratory cruise last summer round the island of Newfoundland. Mr. Murray, F.G.S., who has surveyed a considerable portion of the island, told me he had not met with any rock of a similar kind therein.

Cartwright remarks that he was unable to discover any objects which might be looked upon as evidences of religious culture or of superstitious practices in vogue amongst the Red Indians, excepting some small figured bones, neatly carved, and having four prongs, the two middle ones being parallel and almost close together, whilst the outer ones spread like a swallow's tail. A thong was fixed to the handle of each of the bones, which may, as he observes, have been used as amulets.

Having now put together in my paper the statements I have collected concerning the early Indian inhabitants of Newfoundland, it remains to recapitulate briefly some few of the points therein which strike me as of especial interest, without entering upon any vague speculations regarding the "whence and whither" of that strange tribe of whose history so little is known.

That they existed on the island in prehistoric times is shown by the reference to them given by Cabot, the discoverer of the island. The statement of Whitbourne substantiates the tradition mentioned by Cartwright that they formerly mixed in friendly intercourse with some of the inhabitants of the island, from which it seems probable that the inhuman treatment they received in after years from the English fishermen, together with the warfare carried on against them by the Micmac Indians, compelled them to live in a state of complete isolation—a custom so contrary to the usual conduct of the Red Indian when brought into proximity with Europeans. It is a very remarkable circumstance that the dog of the island, which is by nature

so serviceable an animal, should not have been domesticated by a people who in their daily existence must have needed the services of such a useful companion.

The peculiar shape of their canoes may be owing, as suggested to me by Mr. John Evans, Pres. Geo. Soc., to an adaptation of form to circumstances; the greater height of the gunwale and the curving up of the ends of the canoe, as compared with the ordinary birch bark canoe of Canada, would render it less liable to ship a sea, whilst its V-shaped section would increase its capability as a sailing craft in moderate weather. The fact of paddles, arrow-heads, and other articles, having been found on the "Funks," at a distance of more than thirty miles from the mainland, appears to show that the Indians could travel a considerable distance out to sea in their canoes. It may be here remarked that the Micmacs of Newfoundland use skin canoes and "flats" instead of those made of birch bark.

Caution should, I think, be used in attributing all the relics found on the island to the "Beothucs," because some of them may have belonged originally to the Micmac Indians, and perhaps also to the mountaineers and Esquimos of Labrador, with whom it appears they were in communication. The fact of the occurrence of arrow-heads and chips of calcedony in Newfoundland and on the opposite shores of Labrador suggests the idea that the material from which they were made may have been derived from a common source.

The vocabulary of the Indian tongue may prove valuable in the hands of the philologist for comparing the affinities of the language with those of other Indian tribes, and thus enable him to deduce therefrom the probable connection between the different races; but in doing so the emphatic warning given by Professor Huxley in a article on British Ethnology must not be forgotten, viz., that "community of language testifies to close contact of race between the people who speak the language, but to nothing else."

The historical sketch of the aborigines of Newfoundland, which I have drawn from the scanty materials at my disposal, embraces a period of about 340 years, which, commencing in the year of the discovery of the island (1497), terminated about forty years ago. No proofs since that time of the existence of the Beothucs after that period on the island, have been met with. According to the belief entertained by two half-breed hunters, who were probably the last persons who saw them, the miserable remnant of a people who, deprived of their hunting grounds, and reduced in numbers by the incursions and attacks of their barbarous enemies, either left the country by way of the Straits of Belleisle or perished on the island; but of their ultimate fate nothing is known with certainty.

In conclusion, I may state that I am expecting to return to Newfoundland during the ensuing spring, when I shall probably visit the portion of the island formerly frequented by the Red Indians, and, if so, I trust I shall be enabled to gather additional facts from personal observation which may serve as a sequel to the foregoing compilation.

VOCABULARY OF MARY MARCH'S LANGUAGE,

Presented to Mr. John Peyton by the Rev. John Leigh.

A.		Dogwood, or	
Arms	... Memayet	mountain ash.	Emoethook
Arrow	... Dogernat	Duck	... Boodowit
B.		Duck & Drakes	... Mameshet
Boy...	... Būkāshāmēsh	Dancing	... Badisut
Breast	... Bogomot or a	E.	
Bonnet	... Abodoneek	Eye...	... Guinya
Beaver	... Mamshet	Egg...	... Debuic
Boat and vessel..	Adothe	Fat...	... Odoit
Buttons & money	Agamet	Eyebrow	... Marmenk
Berries	... Bibidigemidic	Elbow	... Moccus
Blanket	... Manavooit	Ear...	... Mooshaman
Bear	... Gwashuwet	F.	
Blood	... Iggobauth	Fire...	... Woodrut
Beat	... Buhaskawik	Fish hook	... Adothook
Bite...	... Boshoodik	Feathers	... Abobidress
Blow-the-Nose...	Shegamik	Fall...	... Koshet
Birch bark	... Boyish	Fork	... Ethenwit
Body	... Haddabothic	Fishing line	... Edat or o
C.		Flying	... Miaoth
Clothes	... Thengyam	G.	
Codfish	... Bobboosoret	Girl...	... Emamooset
Cattle—cows and		Gloves	... Obsedeek
horses	... Nethabete	Gun ...	... Adamadret
Cat, domestic	... Abideeshook	Glass	... Hadibiet
Cat, martin	... Adidish	Go out	... Euano
Canoe	... Tapathook	Gull...	... Asson
Cream jug	... Motheryet	Gimlet	... Quadraneuk
Come hither	... Thooret	Grindstone	... Aguathoovet
Candle	... Shaboth	Gunpowder	... Baasothnut
Capelan	... Shamoth	Goose	... Odensook
Cry ...	... Matheoduc	Good night	... Betheok
Comb	... Moidensu	Get up	... Yanyess or G
Chin	... Goun	Gaping	... Abemik
Child	... Immāmōosēt, J. P.	Groaning	... Cheashit
Cut...	... Odishuik	Gooseberry	... Jiggamint
Comet	... Anin	H.	
Clouds	... Berroick or k	Hand	... Mewet
D.		Hair	... Drona
Deer...	... Osweet	House	... Mamruateek
Deers' horns	... Magorun	Hammer	... Mathuis
Dog...	... Māmmasāvēet (or Māmōosērñit, J. P.)	Heart	... Bogodoret
Drawing	... Moeshwadet	Hare	... O lueweet
		Husband	... Zathrook

Hoop ... Waine
 Head ... Govathin-keathut
 Hiccough ... Madyrut
 Herring ... Washemesh

I.

Ice ... Ozeru
 Indian (red) ... Beathook
 Indian cup ... Shucodimit
 Iron ... Mowagesnite or e
 Islands ... Mammashook

K.

Knife ... Nine
 Knee ... Hodamishit
 Kneeling ... Acusthibit
 Kiss... ... Widumite or ik

L.

Lobster ... Odjet
 Lamp ... Bobbiduishemet
 Lord bird (or Har-
 lequinduck?)... Mammadronit or u
 Leg ... Aduse
 Lead ... Goosheben
 Lip ... Ooish
 Lie down ... Bituwait
 Louse ... Kusebeet

M.

Man ... Bukashman (or
 Bookshimôn, J.P.)
 Mouth ... Mameshook
 Moon ... Kuis and Washew-
 nish
 Mosquito (black
 fly) ... Shema-bogosthuc

N.

Nose ... Gun or geen
 Net... ... Giggaremanet
 Necklace ... Bethec
 Night and dark-
 ness ... Washeu
 Nipper(mosquito) Bebadrook
 Nails ... Quish
 Neck and throat. Tedesheet

O.

Oil ... Emet
 Otter ... Edru or ee
 Ochre ... Odemet
 Oar... ... Podibeac

P.

Puppies ... Mammasaveet
 Puppy ... Mammôosémich, J.P.
 Pin... ... Dosomite
 Parbridge (Ptar-
 migan) ... Zosweet
 Pitcher and cup. Manune

Pigeon (a sea
 bird) ... Bobbidish
 Puffin ... Gwashawit

R.

Rocks ... Ahmee
 Rain ... Bathuc
 Running ... Wothamashet
 Rowing ... Osavate

S.

Shoes ... Moosin
 Smoke ... Bosdic or a
 Seal ... Bidesook
 Shaking ... Mathic-bidesook
 Spoon ... Adadimiuk or ute
 Sun... ... Kuis and Manga-
 roomish or u
 Sit down ... Athess
 Sleep ... Isedoweet
 Saw... ... Deddoweet
 Sails ... Ejabathook
 Shovel ... Godawik
 Stockings ... Gosset, gasack
 Sword ... Bidisoni
 Silk handkerchief Egibidinish
 Scissors ... Ozegeen
 Sore throat ... Anadrick
 Snipe ... Aoujet
 Swimming ... Thoowidgee
 Seal sunken ... Apparet o bidesook
 Scratch ... Bashubet
 Scallop or Frill... Gowet
 Sneezing ... Adjith
 Singing ... Awoodet
 Shoulder ... Manegemethon
 Standing ... Kingiabit
 Shaking hands... Meeman Monasthus
 Stars ... Adenishit

T.

Teeth ... Botomet ontherma-
 yet
 Trap ... Shabathooet or t
 Trousers ... Mowead
 Trout ... Dattomeish
 Tillass (? mean-
 ing) ... Gotheyet
 Turr (a sea bird) Geonet
 Tuiker (? mean-
 ing) ... Osthook
 Tickle (? a rapid
 current in a nar-
 row channel)... Kadmishuite
 Thank you ... Thine
 Thumb ... Itweena
 Tongue ... Memasuk
 Throw ... Pugathoite
 Thread ... Meroobish
 Thunder ... Baroodisick

W.		NUMERALS.	
Woman	... Emamoose, Immä-moose, J. P.	One ..	... Gathet
Water	... Ebanthoo	Two...	... Añasic
Watch	... Kuis	Three	... Thedsic
Woodpecker	... Shebohowit	Four	... Abodoesic
Wife	... Oosuck	Five	... Nijeeek or c
Walk	... Woothyat	Six ...	... Rigadosic
Warming yourself	Obosheen	Seven	... O-o-dosook
Wind	... Gidyethuc	Eight	... Aodoosook
Wolf	... Moisamadrook	Nine	... Yeothoduc
		Ten...	... Theant

Without pretending to have any knowledge of philology, I may perhaps observe that several curious facts are noticeable in the foregoing list of words. The use of the diphthong *th* is of frequent occurrence, and the English words “sun,” “moon,” and “watch”—which latter, I take it, means a time measurer—are expressed in the Indian language by the word “*kuis*.”* My friend, Professor Marshall, has suggested that the identity of the words signifying watch, sun, and moon may be explained by the fact of the similarity in form of the different objects. Had there been in the Indian tongue any word to express the idea of a *Deity*, I do not think it would have escaped the notice of the clergyman who drew up the vocabulary. It is a pity that the accentuation should not have been added to each word. To those I have heard spoken myself I have supplied the deficiency. I was informed by Mr. Whiteway, of St. John’s, Newfoundland, that the vocabulary had been in the hands of one of the Presidents of the Asiatic Society, but with what results I could not learn. John Louis, a Mohawk “*métis*,” who could speak several Indian languages, told Mr. Curtis that the language of the Beothucs was unknown amongst the Canadian Indians.

NOTES on INDIAN REMAINS FOUND on the COAST of LABRADOR.

By T. G. B. LLOYD, C.E., F.G.S., M.A.I.

WHILST my colleague, Mr. John Milne, and myself were engaged upon a survey of certain mineral districts on the coast of Newfoundland during last summer, our schooner was compelled by stress of weather to put into Forteau Bay, Labrador, which is situated at the western end of the Straits of Belleisle, where she was detained for about a week by contrary winds. An opportunity was thus afforded me of visiting two localities on the coast in which, as I had been informed by the Rev. Mr. Botword of St. John’s, Newfoundland, Indian Graves and Stone Arrow-heads had been discovered.

At Long Point, on the east side of Forteau Bay, and at a short distance from the lighthouse which is erected at the entrance

* In many cases the letters *n* and *u* were undistinguishable from each other in the original manuscript, and the terminations *ik* and *ite* may have been, in some cases wrongly substituted for each other.

of the harbour, a flat ledge of Lower Potsdam sandstone, about a quarter of a mile in length, and 400 yards in width, lies at the base of a high precipitous cliff; its surface is elevated about 15 ft. or so above high-water mark, beyond which a low shelving platform of rock is laid bare by the receding tide. On the surface of the upper platform were visible the ruins of seven small stone buildings, which were located in the manner shown in the accompanying sketch plan. [Plate iii.]

No. 1 consisted of three walls in a very ruinous condition.

No. 2 was of an oblong form, and of the dimensions shown in the plan and elevation. The tops of the walls were 2 ft. 6 in. above the surface of the ground. The man who acted as my guide informed me that three or four years ago they extended upwards to a height of about 7 ft., and the two side walls were arched over, in the manner shown in the sketch. In the front wall, overlooking the sea, a break was observed of 2 ft. 6 in. width.

No. 3 was in too fragmentary a state to admit of its exact shape and dimensions being taken.

In No. 4 the back wall was curved, and the side wall, on the right hand of the sketch, extended 10 ft. beyond the one on the left.

No. 5 formed a square 6 ft. by 6 ft.

No. 6 was nearly circular, and of 15 ft. diameter outside the walls.

No. 7, shaped like a half-moon, was probably, in its original state, of the form and dimensions of No. 6.

The buildings which were disposed in an irregular manner, and at distances from each other varying from about 10 ft. to 50 ft. or 60 ft., and from that to 100 yards, were built up of slabs of sandstone of various sizes, laid roughly upon each other, and filled in with turf sods.

Mr. Botwood informed me that when he was living at Forteau Bay some eight or nine years ago, he visited the so-called "graves," which he described to me as having been open at one end, and inside of them was a platform of stones, raised above the floor, over which was placed another platform of slab, under the bottom one of which the skeletons were supposed to be deposited.

Both inside and outside of the walls, I found confused heaps of slabs, which appeared to me to have been dislodged from their positions thereon; but I could detect no indications of the platforms above alluded to. On making inquiries from some of the fishermen and others, living round that part of the coast, I was unable to hear of any instance of skeletons or bones having been found in any of the so-called Indian Graves. I was told,

however, that a few stone buildings, similar to those just described, existed formerly on the landwash at the "Tickle," a place about half a mile east of Capstan Island.

The next locality, where Indian relics have been found, is situated about twenty miles east of Forteau Bay, near Capstan Island, at the head of a cove, named L'Anse du Diable, which is pronounced *Lancy Jobble* by the English-speaking community. It lies upon a low undulating tract of land, shut in on the east and west by lofty and abrupt cliffs of Lower Potsdam Sandstone, which lie unconformably on beds of Gneissoid rock of Laurentian age; in the latter of which are thick beds, or veins, of opaque quartz. A deposit of fine sand, above the surface of which *roches moutonnées*, or "hogsbacks" as they are called in America, are visible in places, forms the bottom of the valley, through which a creek finds its way into the sea at the head of the Cove. On the surface of the sand is a coating of turf, moss, and heath, with partridge-berry shrubs, whilst here and there low bushes of dwarf juniper, spruce, and elder protect the underlying sand from the action of the wind. Amongst the sand hillocks were seen numerous shallow pits, of various sizes, the largest of which was about 50 ft. long and 30 or 40 ft. wide, with a depth of about 10 ft.; whilst some of them were mere shallow depressions about 2 ft. deep or less. On the surface of these, the arrow-heads, chips, and flakes were found distributed, principally in groups, but occasionally a single one was discovered lying apart. I was told by Mrs. Buckle, who lives near the spot, that after the occurrence of high winds was the best time to search for the specimens; and she also informed me that, whilst she was out one day on the barrens, about thirteen years ago, gathering berries, she discovered near the right hand bank of the brook a heap of arrow-heads, some two or three dozen in number, piled up against each other, with the apparent intention on the part of the owner to return for them at some future time.

It is worthy of notice that the arrow-heads of quartzite, with the exception of a broken one of rock crystal and a small chip of the same material, were found exclusively on the part of the barren which lay on the right hand bank of the stream; whilst the arrow-heads and fragments of rock crystal were picked up on the left hand side of the brook.

The Micmac Indian, who accompanied me on the second day of my search, suggested, on our arriving at the Creek, that we should go and search amongst some sandhills which appeared to him as likely to have formed the site of an Indian encampment by the reason of the short thick growth of the turf around. It was in this spot we picked up the finely-worked arrow-

heads of quartzite, which lay on a shallow depression in the sand, and where there were evident marks of fire, as shown by the blackened sand underneath, and the burnt appearance of the underlying rock.

From the information I obtained respecting the present race of Montagnais, or "Mountaineer Indians," who live up the country some forty or fifty miles from the sea coast, I do not think they were the manufacturers of the arrow-heads, for they are supplied with fire-arms and ammunition by the Hudson's Bay Company with which they trade in skins, &c.; although, like the Micmac Indians of Newfoundland, they make use of the bow and arrow, the latter untipped, for killing ptarmigan, blue jays, and "such small deer." The Esquimos do not frequent that part of the coast at the present day.

In conclusion I would suggest the probability that the stone buildings were used formerly as dwelling-places by families of Indians who resorted to the coast in the summer-time for the purpose of catching fish, such as cod, salmon, and sea-trout, of which an abundant supply is to be had in the Bay, and in the river at its head. The absence of timber in the vicinity of Long Point, and of any traces of its ever having grown thereabouts, may have compelled the Indian people to use the sandstone slabs in lieu of wood for the construction of their huts. On the other hand, as is stated in the paper on the "Beothucs," the Red Indians of Newfoundland, were accustomed to carry their dead considerable distances to the seashore for burial; but the absence of any human bones, and of traces of sepulture, is, I think, evidence of considerable weight against the "Indian grave" hypothesis. It may be noticed in this connection that no traces of kitchen middens have been found, so far as I am aware, either on the coast of Newfoundland or of Labrador.

The traces of an Indian encampment, which probably was one of considerable duration, as evidenced by the condition of the herbage around the spot, the state of the arrow-heads, and the peculiar positions in which they were found lying, point to the conclusion that the barren at the head of L'Anse du Diable was a spot selected for the manufacture of them by some unknown people. The freshly-made appearance of the implements of quartzite may have been caused by their having been buried in dry sand, so that any speculation as to their age would be fruitless. The supply of fish from sea and stream, the abundant growth of berries, together with the fact that, as I was informed, the spot used to be much frequented by ptarmigan, bears, and cariboo, must have fitted it for a residence for Indians during the summer months. With regard to the probable source from whence the savages obtained the material for the manufacture of their

arrow-heads, no conclusion can be arrived at until a search has been made in the Laurentian and Potsdam beds of the surrounding district. I may remark that I may have a chance during the present year of collecting more of the specimens, and additional facts regarding the Indian remains.

DISCUSSION.

Mr. A. L. LEWIS said, if he, as a visitor, might be allowed to put a question, he would ask whether the author himself had found all the implements, etc., exhibited? There appeared to be some local demand for them, and the fact that an Indian had offered to conduct him to a likely place to find some, and had immediately found some there, might seem to indicate that there was also a local supply, but he had no doubt that the author had taken all necessary precaution in the matter.

Mr. C. H. E. CARMICHAEL referred to his paper sent up to the British Association at Bradford through the Institute, and printed in the July-October number of the journal, in which he had set forth the views developed by Professor Gennarelli on the existence of a red race in Europe. In the Beothucs, if he rightly understood the author of the paper now before the meeting, we had a people who were red only in virtue of using paint to produce that tint. If the Beothucs were not really red men, *i. e.*, part of the race commonly known as the Red Indians, he should be glad to hear any suggestion that might be offered as to the race to which they did belong, as no light had been thrown upon that question in the course of the paper.

The CHAIRMAN expressed the great pleasure he had derived from listening to the author's papers, which were of a class most welcome to the Institute, for he had described a series of remains on the Coast of Labrador which were, so far as he was aware, quite new, and if the drawings of the position of the stones in the arches were correct, indicated an age of not more than a few hundred years. He himself was surprised that so little had been written about the Indian remains in this part of America, and the last person who explored the country, Mr. Hind, said scarcely anything upon the subject. The nature of the rocks on which these remains were found, being of Potsdam sandstone, one of the divisions of the lower Silurian system, would probably explain the occurrence of quartzite and other arrow-heads which the author had exhibited, for some distance farther to the eastward commenced the great series of the Laurentian system, which had been described by his friend Sir William Logan, extending many hundred of miles still further east, through the heart of Canada, in which quartzite, gneissose and other rocks were found. Although the author had described the little peninsula in his paper as composed of Potsdam sandstone, he said nothing about the foot-prints of crustaceans, which were first supposed by Professor Owen to be those of a tortoise, and called *Protichnites*, found in this rock, but which might be discovered, if carefully looked for, at Labrador. He,

the chairman, was familiar with them, as they occurred at Beauharnois, St. Genevieve on the Island of Montreal, and other places, when they were first described upwards of twenty-five years ago, and as the author contemplated another visit to Labrador, he would recommend a search for them. The stone implements shown possessed a more modern and somewhat different appearance to those he, Sir D. Gibb, had brought before the Institute some months back, which were figured in the Journal, and he thought they were less ancient, although he would not deny that the arrow-heads represented some amount of antiquity. Their general shape, too, differed much from his specimens. The description of the Indian graves and modes of interment was similar to that of the ancient aborigines in other parts of Canada, especially on the Island of Montreal, where the bodies were found doubled up, and faced, he believed, particular directions. The more modern Indians, such as he knew them at the Lake of Two Mountains, Caughnawanga, and other places near Montreal, were now buried in coffins in a truly Christian fashion. In reply to the question put to him, the chairman, by Mr. Park Harrison about the colour of the Red Indians, he believed that it was not always due to pigment. He had seen the children and the squaws of Indians on numerous occasions, when a boy, and recollected well their distinct dirty dark brown colour, which was unmistakably natural and not due either to pigment or to dirt. The skull from the Indian graves was well formed, and strongly simulated the Caucasian type, although undoubtedly Indian, proving at any rate a remarkably great amount of intelligence.

Mr. LLOYD said, in answer to a doubt expressed by some one present as to the genuineness of the quartzite arrow-heads picked up by the Indian guide, that he was not aware of the fact that the art of Flint Jack had as yet crossed the Atlantic; but, supposing that those handed to him by the Indian might be forgeries, he hoped that those picked up by himself would be considered as genuine. Respecting the question raised as to what constituted a real Red Indian, the author replied that he had nothing to say, because his knowledge of Indians was confined to an acquaintance with half-civilised Iroquois, Alquequin, and Micmac Indians.

The meeting then separated.

MARCH 10th, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

THE Minutes of the last Meeting were read and confirmed.

The following new member was announced: J. ALEXANDER STEWART, Esq., of Christ Church College, Oxford.

The following presents were announced, and the thanks of the meeting were voted to the respective donors:

FOR THE LIBRARY.

- From the BOARD.—Fifty-eighth Annual Report of the Board of Public Education. Philadelphia, 1872.
- From the ACADEMY.—Transactions of the Academy of Science of St. Louis. Vol. iii, No. 1.
- From the UNITED STATES GOVERNMENT.—Accidental of North America, By Prof. Cyrus Thomas, Ph.D.
- From the EDITOR.—Revue Scientifique. Nos. 35 and 36. 1874.
- From the SOCIETY OF ANTIQUARIES, LONDON.—Archæologia; or, Miscellaneous Tracts relating to Antiquity. Vol. xliii, Part 2, Vol. xlv, Part 1.
- From the ASSOCIATION.—Annual Report of the Geologists' Association, 1873.
- From the SOCIETY.—Jahrbuch der K. K. Geologischen Reichsanstalt. Vol. xxiii, No. 4. Verhandlungen, ditto, Nos. 1-18.
- From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. iii, No. 10.
- From the EDITOR.—Nature (to date).
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The Director read the following papers:

The MIXED or "HALFBREED" RACES of NORTH - WESTERN CANADA. By A. P. REID, M.D., L.R.C.S. Edin., etc., etc.

In taking up the subject at the head of this paper, I thought that a few words, from one who spent a part of two years (1860—61) amongst those races, might interest the members.

These mixed races are several—

1. The Anglo-Saxon father and Indian mother.
2. The French and French-Canadian father and Indian mother.
3. The Anglo-Saxon father and mixed Anglo-Saxon and Indian mother.
4. The French father and mixed French and Indian mother.
5. The "Halfbreed" Anglo-Saxon and Indian as father and mother.
6. The "Halfbreed" French and Indian as father and mother.
7. The descendants proceeding from intermarriage of fifth class.

8. The descendants proceeding from intermarriage of sixth class.

9. The Mixed or "Halfbreed" father and Indian mother.

These nine divisions will include the principal mass of the mixed races in Manitoba. The French and Anglo-Saxons and their descendants rarely intermarry.

1st Class.—The Anglo-Saxon father and Indian mother. This class is chiefly descended from the Scotch and English servants brought to the country in the service of the Hudson's Bay Company.

On first meeting with these, and I may say the same of all the others, one is apt to form an incorrect estimate of their position in the human family and consider them as more nearly related to the pure Indian than longer acquaintance would justify. For their exposure to the open air and the customs of the country give them a swarthier look and different manners than would otherwise be theirs. In fact the pure Anglo-Saxon, after a few years of exposure to the same influences, acquires a similar mien—so much so that for a time I had to inquire whether Mr. — was a "halfbreed" or pure white. Even long acquaintance will not always permit a correct opinion to be formed regarding strangers. Considering their opportunities and surroundings, they are not inferior to their fathers, unless it be in that energy and "push" characteristic of their sires.

Their mothers' blood has not, as a rule, imparted that restlessness, slovenliness, impatience of control, wild liberty, superstition, and, when roused, the fiendish hatred and temper, that might have been anticipated.

The Anglo-Saxon "halfbreeds" (or "natives," as they prefer being called, "halfbreed" being looked on by them as a term of reproach,) are mostly agriculturists, honest, industrious, and intelligent for their opportunities.

2nd Class.—The French "halfbreeds" or "natives" are descended from the servants of the Old "North-West" Fur Company, that preceded the Hudson's Bay Company in the occupancy of this territory, and also from the servants of the latter brought from the French portion of Canada. The remarks just made of the first will apply with equal accuracy to this class. Many cultivate the soil, but a large number prefer to make the "chase" their industry, and are hunters because it is profitable as well as exciting, with freedom in its wildest sense. They are honest, industrious, and very energetic in their calling.

The Hudson's Bay Company depended chiefly on the French "natives" to perform the very severe labour attached to transporting their goods by boat and canoe and "portages" over all

their vast territories, and the collection and transport of their "peltries" to the seaboard at York Factory on Hudson's Bay.

3rd and 4th Classes.—These have more white blood in them, but there is no trait that would call for special comment.

5th, 6th, 7th, and 8th Classes.—These are the results of inter-marriages of "halfbreed" with "halfbreed," producing races that are scarcely equal to the first remove—their parents. There is rather a tendency towards the Indian type taken as a whole, though there are great differences in individuals. The more distant from first and second classes the nearer approach to the race of the primitive mother.

9th Class.—A still further remove from the white, whose traits, as might be expected, are less prominent, but yet sufficient to make a most marked distinction between them and the native Indian.

The French "halfbreeds" in the country were by far the most numerous.

Taking the whole mixed population of Manitoba, they cannot be said to have any objectionable peculiarities—they are not more inclined to the abuse of alcohol or to immorality than whites, and it would be difficult to meet with a people who have fewer faults. Some of the families of pure white and pure Indian are very numerous, reaching up to fourteen and fifteen; but this is not common, from four to six being an average.

I have noticed a very great difference between members of the same family—some of both sexes being exceptionally clear-skinned, with handsome features, fine hair, and good physique that would be admired anywhere; others, brothers and sisters, inclining to the type of the Indian, apathetic air, lazy, high-cheek bones, and long straight, coarse, black hair. They live to a good old age, and are not subject to disease; this no doubt being due to their mode of life.

Their capacity for education also varies—the best types will not equal the better class of white intellect, but are far above medium. The desire for high-class education is not common, but I judge it to be greatly owing to want of opportunity.

The French native differs from the English and Scotch, as much so and in a similar manner as the difference between their respective parents—not that there is more or less honesty, natural intelligence or energy, but these qualities are differently displayed. The farm monopolises the attention of the Scotch, who are far more numerous than the English, though with similar aspirations. The chase and service with the Hudson's Bay Company are far more congenial to the French. The Scotch farmer has better tilled land and better houses than his French kinsman; but the tent of the French hunter, which may be put up

and taken down every day, is neat, roomy, and comfortable, and admirably adapted to his calling.

They all class themselves as the equals of the white, and look patronisingly at the Indian. All are zealous and are not bigoted in their respective religious beliefs, which is no doubt due to the admirable training they have received from their missionaries. The Anglo-Saxon "halfbreeds" all speak English and Indian. The French speak the French and Indian. Communication between the English and French takes place chiefly in Indian—their common mother tongue. The English rarely speak French, and *vice versa*.

Those that follow the chase, or "hunters" as they are termed, are chiefly of French extraction, and it is my impression that they are of the sixth and eighth classes, or "half-breeds," and the descendants of their intermarriages. Both French and English farmers are in the habit of "going to the plains" in the fall to secure a winter supply of pemmican, dried meat and leather, when they do not buy these necessities from the "hunters" proper, on their coming to the settlement to dispose of their produce.

The hunters live on the plains all the year round, and come to the Red River settlement at Fort Garry (now Winnipeg) at stated intervals—spring, summer, and fall—to sell the products of the chase and get in their supplies; at least such was the habit when I lived there, though now these customs may be somewhat modified owing to the political changes which have since taken place.

The outfit consisted chiefly of tea, tobacco, salt, and flour as provisions. Powder, bullets, and shot, with, perhaps, some repairs to their guns.

Their carts, saddles, and harness have no iron about them, nor any other metal, so that they are independent of the artizan. They make their own carts, but very often buy pairs of wheels, which are generally made where good oak and elm woods are to be had. Of late years they use cast-iron bushes in their wheels, which make them more durable. No tires, iron or otherwise, are used on their carts, and yet the wooden felloes travel thousands of miles over the soft prairie roads without much perceptible wear, and if one gets split a piece of buffalo hide wrapped round it will last for a long time. I drove carts loaded with from 400 to 800 pounds more than 1,000 miles, and they did not appear any worse than at the commencement of the journey, and brought the sum I paid for them, twenty-five to thirty-five shillings sterling.

The spring visit of the hunters is for the sale of buffalo robes and furs, for it is only during the winter that these are of value

The robes are all dressed by them in the Indian fashion, made thin and pliable, and smoked as a preservative from ordinary decay or the attacks of insects.

The summer visit is for the sale of dressed buffalo skins, intended for making mocassins, leggings, harness, and such like; dried or jerked buffalo meat, marrowfat, and summer "pemmican," always used on journeys, or where preserved provision is necessary, as it will keep for a long time from being better desiccated, in contradistinction to the fall or winter "pemmican," which is, if anything, cheaper and more palatable from having a little moisture left in it. It will not keep good longer than the winter season, and there is not so much of it made. It is disposed of on the fall visit.

Pemmican is thus prepared: the carcase of the buffalo is stripped of its flesh—fat and lean; the fat is fried out by itself; the lean is cut into very large thin slices and dried in the sun; but when designed to keep for a lengthened period, a small fire is lighted below the staging on which the meat is spread out, and every particle of moisture evaporated, until it is quite brittle and hard.

These slices are then put on a buffalo hide on the ground, and broken into dust or very fine pieces with a flail. It is then mixed with the boiling fat and tallow, and while still hot is put into sacks of buffalo hide that are about 3 feet long and 15 to 18 inches in diameter. These, when filled, are tightly sewed up, and before cooling are laid on the ground and others piled on the top, so that they are made to assume a flattened form about 3 feet long, 16 to 20 inches wide, and 6 inches thick, weighing from 90 to 110 pounds. When I was there it was worth threepence sterling, or from six to seven cents, per pound.

A higher-priced article is occasionally made, called "berry pemmican." A wild berry, very plentiful on the prairie, named "pemmican berry," is dried and mixed with the other ingredients. This berry has a sweet acidulous taste; I forget its scientific name.

No part of the buffalo is allowed to go to waste. The skin is made into leather, so termed, not tanned, but dressed in the Indian manner (and looks like buckskin), for mocassins, tents, saddles, &c., and a less dressed article, termed "raw hide," to make harness, &c. The flesh is made into "pemmican" and dried meat. The *ligamentum nuchæ* into what is termed "sinew," for sewing all articles of leather manufacture. The large bones are broken, and the marrow rendered out preserved and sold as "marrowfat," and often used instead of butter as it is rather palatable; it was worth sixpence per pound, and put up most frequently in bladders.

They own a large stock of horses, peculiar to the country, that live in the open air all the year round, pawing the snow off the grass in winter. Many of these will not eat hay, even when made from prairie grass, being unused to it.

The better class of horses, styled "buffalo runners," are very fleet, and have extraordinary powers of endurance, considering their food.

These "halfbreeds" are, I suppose, the best horsemen in the world, take them as a class; being far superior to the Indian in pluck and energy. Their mode of capturing the buffalo is to approach as nearly as possible on horseback, and at a given signal to charge into the midst of the band, shooting right and left, and this is continued as long as the endurance of the horse lasts. The women and carts follow to dress the slaughtered animals. It is astonishing how few accidents happen in this form of the chase; the badger holes, which are very numerous on the prairie in many places, bring both man and horse often to the ground, but rarely entailing much injury. The horse is trained to be guided by the foot and inclination of the body of the rider so that his arms are free to use his weapon.

The flint lock gun, carrying half-ounce round balls, is preferred for ease in loading; the vent is enlarged so that the pan is charged by the fine-grained powder poured into the muzzle of the gun from the powder-horn, the amount being only measured by guess. The balls are carried in the mouth, and from it are dropped into the gun. The ball being moist causes grains of powder to adhere to it, and prevents it from rolling out when the muzzle is lowered.

No ramrod is used, a shake of the gun being sufficient to bring the ball down to the breech, and whether or not they blaze away all the same—a gun but rarely bursting. In the summer of 1860 a gun exploded at the moment when the hunter was dropping the ball in the muzzle; he escaped with life, but his face was much injured. This was the only accident of note for that year on the prairie. In this way they shoot with great rapidity, and I have known them to load and fire almost as fast as an ordinary man could discharge a loaded revolver. They do not require to take much aim as the horse keeps close to and a little behind the buffalo.

A good "buffalo runner" is very highly prized, and he must be fleet to keep up with, let alone overtake, the buffalo when at full speed, and often over very rough ground. A very long-folded raw hide line, 40 to 50 feet, attached to the horse's mouth is loosely fixed in the rider's belt, so that in case of an upset this line becomes loose, and trailing on the ground enables the rider to capture his steed; if he do not succeed, the horse

may be lost, for he is very apt to continue the chase on his own account when gaining his liberty and uninjured.

The hunters, in pursuit of their calling, live in the Indian country, and sometimes have difficulties with the aborigines; but the Indian is well aware of the kindness as well as energy of his kinsmen, who are always well supplied with everything, and are very wary, so that for the most part they pursue their calling in peace.

The mixed races of North-Western Canada as a class are admirably adapted for their location, but no doubt immigration will greatly dilute the Indian blood, as well as greatly modify their habits. They are quick to recognise improvement and apt to learn, so that they will not lag in the rear in the march of civilisation. Hence we may expect them to be recognised and valued as one of the many peoples that will go to make up the population of the Dominion of Canada.

DISCUSSION.

SIR DUNCAN GIBB said he was much interested in the able paper of his friend the author, as he had lived a portion of the earlier part of his life in Canada, and knew a good deal about the north-west and Hudson's Bay territories, although he had never been there. He fully recognised the author's divisions of the mixed or half-breed races, but in discussing them the two first were practically the most important. He knew many families, when in Canada, who were half breeds, and several of his old schoolfellows and fellow students at college were the descendants of Scotch or other parents and Indian mothers, and he referred to a number of persons by name well known in Canada, whose parents were at one time factors in the Hudson's Bay Company; but some how or other, with a few exceptions, they were mostly dead, and the disease which carried them off was pulmonary consumption before the age of 30. The only reason he could give for this was the mode of living and change of climate, certainly different from that in the north-west, where the mixed races lived on, at any rate sometimes, to a great age, and did not die early, as correctly shown by the author of the paper. A grand uncle maternally of Sir D. Gibb—Colin Campbell—who was a Scotchman and a partner in the Hudson's Bay Company, married a daughter of the Honourable John McGillivray in the north-west. She was a third remove from the Indian, and he recollected when he was a lad seeing her and her children on a visit to Montreal, and a handsomer set of girls was not to be seen anywhere. She had five sons and nine daughters, and on her return to the north-west every one of the girls married and became the mothers of numerous families. Two of the sons afterwards came south and died of some chest disease in the course of time. As a rule, most of the children in the families he knew were numerous, but they did not live to any great age away

from their parent country, of course there would be some exceptions, and he gave the names of a few. Whilst the men were usually fine figures, well made, tall and strong, they were not handsome; on the other hand the women were mostly good looking, pleasing in their manners, and even fascinating; no wonder therefore they were sought in marriage, especially in the north, where women were scarce. Certainly, as the necessary result of emigration southward to a different climate and different mode of life, these mixed races in the course of time mostly died out, but the author's description of them on the whole was correct, as they lived in the north-west. He recollected well all of his numerous cousins spoke to one another in Indian or in English, and the mother used frequently to call out "cockey-too," which meant "be quiet," when they were noisy. A large proportion of Scotch existed in the north-west who married Indian ladies or their descendants, and very few English or Irish, although his friend, the late Mr. W. Dease, of Montreal, was of Irish descent. The word Anglo-Saxon in the author's tables should be therefore changed to British descent. He could confirm the author's description of hunting and other matters from what he had been told himself, and the large vent in the old flint guns reminds one of some of the descriptions given of the Deerslayer in Fennimore Cooper's novels.

Mr. JOHN E. PRICE remarked that in the publication of Dr. Reid's paper it might be desirable to adopt another term to that of Anglo-Saxon, as applied to the marriages of British colonists with the races of North America. While the meaning of the author was perfectly clear, the term was hardly applicable to so composite a being as the modern Englishman. It savoured of the eighth or ninth century, its popular use identifying it with the period ranging from the withdrawal of the Roman Government in the fifth century, and the advent of William the Norman in 1066.

Mr. HYDE CLARKE and the PRESIDENT also made some observations.

FURTHER NOTES on the MIXED RACES of AUSTRALIA, and their MIGRATIONS and LANGUAGE. By REV. GEORGE TAPLIN.

I HAVE always felt that it was my duty to transmit any information which in the course of my work I might collect to men who, having much better opportunities of gathering up and comparing facts than I have, would therefore perhaps be able to make some use of the shreds and scraps which I might pick up.

My object in making this collection of native languages is one which has suggested itself to my own mind and excited my own curiosity. It is to trace the course of migration of the tribes of Aborigines into this continent. Many years ago, when learning *Natuaie*—i.e., the vernacular of the Narrinyeri tribes—I could not help noticing that they often had two words with one mean-

ing; for instance, nguk and barekar both meant water, yarnin and meruwallin both meant talking, tingowun and ramin both meant telling, and so on. This suggested to my mind the idea that probably the Narrinyeri were a mixed race, and that these synonymous words occupied a corresponding place in their language to that which words derived from the Anglo-Saxon and Latin or Greek do in ours. I then found several evidences that they were a mixed race. I discovered that while some of the natives had a light complexion and *straight* hair, and a cast of countenance peculiar to themselves, others of the natives had woolly hair, very black complexion, and a different cast of features. I then found in the course of my reading and observation that there are superstitions and customs amongst the Narrinyeri identical even in name with the Samoans and the Tanese. For instance, every Samoan has, or had, according to Dr. George Turner, his *aitu*. This consisted in some fish, or bird, or insect, which was the totem of his family, and he supposed that if he ate the *aitu* it would form in his inside and kill him. Well, the Narrinyeri believe that every tribe has its *ngaitye* (observe the similarity of the word to *aitu*), and this *ngaitye* is the totem of the tribe, and they suppose that if they eat a portion of the *ngaitye*, and an enemy of the tribe gets hold of the remainder, he can make it the means of powerful sorcery, and cause it to grow in the inside of the eater of it. Therefore, when a man eats of his tribe's *ngaitye*, he is careful either to eat it all or else to conceal and destroy the remains. I remember an old man killing a large mygale spider, which was the *ngaitye* of his tribe, and, to prevent mischief, he immediately swallowed it.

I found another instance of this correspondence of customs in the kind of sorcery called *ngadhungi*. If a man can obtain a portion of the bones of certain birds or fishes which have been eaten by an enemy he is able to make a sort of charm with them. He mixes them up with grease and red ochre and hair, and puts the mass in a round form on the top of a skewer of kangaroo bone, and then he supposes that by sticking this thing down by the fire and letting the mass melt he will cause disease in the enemy who originally ate the bird or fish from which the fragment was taken. Now this is similar to the *nahak* of the Tanese, which is described by Dr. George Turner in his work on Polynesia.

I found also that this fact of the Australian Aborigines being a mixed race had been observed by Sir G. Grey in Western Australia. The question then arose in my mind as to where these people came from, and it was suggested to me that probably an extensive and exact comparison of the words least likely to change in the various languages of the Aborigines would show the track of the tribes into the continent. A tribe of hunters

soon becomes too many for a tract of country, and then a portion of the tribe—probably a few of the younger and more daring men of each of the clans composing the tribe—would press on into the unoccupied country, leaving the older men and a portion of the younger members of the tribe in that tract of country to which they were attached. And then the process would be repeated in the course of generations. But in each move there would be a carrying away of many words of the original tribe which first landed on the shores of Australia, and the course of migration would be traced by them. Let me give an illustration. The Cornu tribe, north of River Darling, calls water *noko*. The Moreton Bay tribe calls water *kung*. The Wide Bay (Queensland) tribe calls water *kong*. The Maroura tribe at the mouth of the Darling calls water *nukou*; the Moorundee tribe, *ngukko*; the Narrinyeri, Lake Alexandrina and lower Murray, *nguk*. Hence I think that these tribes are the offspring of an original tribe which landed at Moreton Bay or Wide Bay, in Queensland, unless they can be traced further north up the coast. It is remarkable that we have positive evidence of the migration of one of these tribes—the Maroura. When Sir T. Mitchell led his expedition down the Bogan to the junction of that river with the Upper Darling he was attacked there by a very hostile tribe, the members of which he got to know well nevertheless, as he stayed a long time at Fort Bourke. Some years afterwards there was an expedition to the junction of the Darling with the Murray, and there, to their great astonishment, they found their old friends of Fort Bourke, as hostile as ever. They had descended the Darling four hundred miles, and have ever since occupied the country around the junction.

If we ask the Narrinyeri where they came from, they invariably say that they came down the river—that is, down the Murray and Darling. I think, therefore, that more exact knowledge will show that we have one line of migration down the Darling from the coast in Queensland. I think, also, that another line of migration will be discovered from the head of the Gulf of Carpentaria, across the continent, by way of the great depression, to Cooper's Creek and Lake Hope. I enclose an extract from a letter of the explorer, Mr. A. W. Howitt, which, I think, gives us reasons for this conclusion. The Dieri, Tinga, Tingana, and Yantru Wantna tribes belong to a line of migration southward from the Gulf of Carpentaria.

The Western Australian tribes, which occupy the country from the western shores of Spencer's Gulf to Cape Leuwin, are of a different course of migration. They have no mats, baskets, twine, or nets. Now the tribes which came down the Darling make excellent twine and nets, and also good mats and baskets.

My theory is this—that the Western Australian tribes came across a part of the continent where there are no great rivers, and that, as a necessary consequence, they had no need to make fishing nets, as there were no fish to catch. Probably, also, fibrous materials were scarce in the country which they crossed, and so they lost the art of making baskets and mats as well as nets. It is easy to see that an art might easily die out in a generation or two in a savage tribe. The art of making some implements and mats has almost ceased amongst these Aborigines here, because Europeans introduced superior articles.

I am pursuing, therefore, my inquiry into the languages of the Aborigines, and hope to obtain better results as I get more information. I hope to trace out the lines of migration of most of the tribes into this continent.

There is another inquiry being pursued by the Rev. Lorimer Fison, of Melbourne. It is with reference to the systems of kinship amongst the Australians, Micronesians, and Polynesians. Mr. Fison kindly invited me to assist him in pursuing this inquiry. He finds that the Tanolian system of kinship almost universally prevails amongst the Australian Aborigines. I say *almost* universally, for I perceive that it is not complete in some tribes, and that it appears as if some portion of some tribes had once a different system. But it is not right to theorise too confidently. Probably Mr. Fison will arrive at more certain conclusions when he has finished his work.

The tribe for whose benefit I labour does not appear to be dying out. It still numbers some six hundred souls. We have a school full of children, and I have the honour to be the pastor of a church of Christian Aborigines. I have lived with this people nearly twenty years, and have been officially connected with this mission nearly fifteen years, and the longer I labour amongst them the more firm is my persuasion that only Christian civilisation can save them from extinction.

I have taken the liberty to write thus at length, supposing your members might be interested. I am very fond of the study of ethnology, and have the failing of thinking that others are like myself.

Extract of Mr. A. W. Howitt's Letter to the Rev. L. Fison, July 7, 1873.

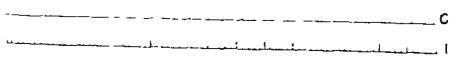
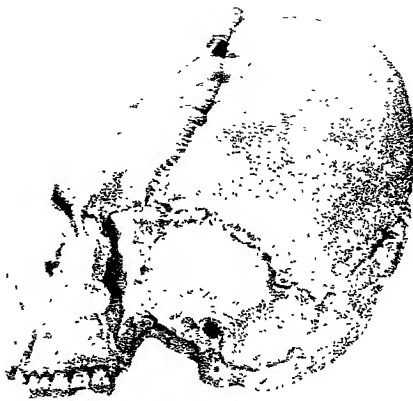
The Dieri, or Deary, which to my mind more fully expresses the sound of the word, are the Aborigines who live on the fresh water lakes into which the flood water of Cooper's Creek flows, and also about the borders of the chain of salt lakes known as the Lake Torrens Basin. Their principal resort is at Lake Hope—the Bando Pinna, or Great Lake. You will probably recognise the word Pinna in the name for old man or father,

"Pinnaroo." On the lower part of the Streletzki's Creek and the salt lakes near it are the Tinga Tingana natives. These, with the Dieri natives, I have heard spoken of as the "Kurnaia appa Kaldree ne," or the salt water blacks. The Dieri also extend to Kopperamana. On Cooper's Creek proper, about 141 deg. east longitude, are the Yantru Wunta. This tribe extends down Streletzki's Creek, and on to Flinn's Creek, in the Barrier ranges, thus extending in a narrow strip far down between the Darling natives and those of the South Australian Hills. North of the Yantru Wunta there are two other tribes, on the south edge of Sturt's Desert. I have forgotten the name. But all these tribes speak essentially the same language, which extends up Cooper's Creek as far as I know it, and on all its flood waters. There are two distinct tribes—those speaking the languages in which water is called appa (Cooper's Creek), and those speaking the languages in which it is called owie or cowie (South Australia—the hill tribes). These two sections of the Aborigines meet at the Salt Lakes, and have, I think, extended from different points. Those saying appa have come down the Cooper's Creek waters, and those saying owie from the westward, for I find this word extending westward through South Australia, round the great Australian Bight, to Western Australia. These languages again differ from those of the Darling, where water is oko—differ so much, that among the Yantru Wuntas it was a standing joke against their neighbours of the Barrier range that they called a snake, fire—the Darling word for snake being Touro, and the Cooper's Creek word for fire the same. I may note that here the words are—fire, toura; snake, turrung. Occasionally natives of Sturt's Desert, the Murda Pinna of the Aborigines, will go down to Lake Hope, and in all probability in this way the relationships of the Aborigines of Wills Creek (now called the Diamantina River), north of Sturt's Desert, will be obtainable. As to the Totems, Purdy, the ant, belonged to Lake Hope. Pitchery and pitchery coono milkee (Pitchery is a narcotic herb), the second name is pitchery of the one eye, Mungallu, the lizard, Tchukurur, the kangaroo, were Yantru Wuntas, belonging to Callion Maroo, at Cooper's Creek, my old depôt.

[Mr. Howitt is wrong. The Western Australian natives do not call water owey or kauwe, but kypi, kypbi, kappi.—G. T.]

DISCUSSION.

The PRESIDENT remarked that whatever might be the value of the linguistic evidence with regard to mixture of races or in the tribes noticed by Mr. Taplin, there could be no doubt of such a mixture really existing among them from the fact mentioned by the author of



MACROCEPHALOUS SKULL TIFLIS.

some of the people having woolly and the others straight hair, clearly showing that there had been an admixture of Papuan with the Australian types.

NOTES on SKULLS and WORKS of ART from a BURIAL GROUND near TIFLIS. By Commander TELFER, R.N. [With Plate iv.]

IN the spring of 1871, when the new road from Tiflis to Vladikavkay, through the David Pass, was being constructed, it was necessary to make a cutting through a slightly elevated piece of land, being a ploughed field, and at the distance of about one mile from the village of Mtzhetha (Mzchete, Medzkhitha) and off the right bank of the Aragoa, a tributary of the river Kour. In clearing away the soil where the cutting had been traced, several graves were disturbed, and their construction and contents having attracted notice, Mr. Beyer was employed by the Russian Government to prosecute researches, and during the summers of 1871-72 that gentleman laid open about two hundred graves. The objects he found have been sent to St. Petersburg, and consisted of ornaments in gold, bronze and iron, coral, ivory, and mother-of-pearl. One small silver vase, having the triumphs of Hercules in relief, excited universal admiration, and must have belonged, from its design and ornamentations, to an epoch of high Grecian art. It was in poor condition. Being desirous of examining these graves, from an archaeological point of view, I obtained permission from the authorities, during my late visit to the Caucasus, whence I have just returned, to open some tombs. Having proceeded to Mtzhetha, I opened six, on the 9th and 10th January, 1873, with the following results:—

First Grave.—Depth of soil, 2 feet 4 inches. Came to two small stone slabs. Upon their removal was disclosed a child's grave formed of six sepulchral bricks, two being upon each side, and one at either end. This little grave—length 3 feet 6 inches, width 14 inches—was filled with earth, and lay east and west. At the east end was a portion of cranium. Body had been laid full length. Near the cranium were composition beads for a necklace; small bronze ring also found. Unable to bring away bones, owing to condition. In employing the term sepulchral brick, I do so advisedly; such bricks have been found only in these graves, and appear to have been largely employed for the purpose.

Second Grave.—Depth of soil, 3 feet. Came to three large sandstone slabs, close and well-fitting. Grave full of earth and stones, some of the latter being large fragments. At east end had been undoubtedly interred a body in a seated posture. Portions of cranium, well to the front, and nearer end of slab; upon

carefully removing the earth, came to vertebræ of the neck, then to portions of ribs, then to sternum, and finally, the femurs, which were lying close up to a corner. At west end, remains of four full-grown bodies, of a youth's, and of a child's. (Sent to the Institute; see Plate iv.) I have been guided here chiefly by the crania. These bodies must have been huddled in, and buried at one time. No relics; found several small pieces of obsidian, shaped like the sharp flint tools, as also pieces of mixed matter—which had passed through fire—a conglomeration of calcined bones, wood, stone, &c. Length of grave 5 feet 3 inches, width 2 feet 4 inches, depth 2 feet 4 inches.

Third Grave.—Head slab showing very slightly above the surface. Covering slabs had been probably taken away at some remote period; excavate soil, 14 inches. Came to six sepulchral bricks, laid flat and loosely; beneath, upon carefully removing the earth, at east end, a seated figure, remains of a child, small bronze ring, and portions of iron ornaments, also fragments of glass bottles. At west end, remains, recumbent. Length of grave, 5 feet 10 inches, width 3 feet, depth 4 feet 8 inches.

Fourth Grave.—Immediately beneath the surface, remains, recumbent. Head, east. Immediately beneath, three huge slabs, irregularly shaped. One skull at east, one skull at west end. Not able to guess positions. Portion of bronze pin, head of pin in gold, fragments of glass. Length of grave, 5 feet 10 inches, width 3 feet 6 inches, depth 7 feet.

Fifth Grave.—Depth of soil, 3 feet. Came to two large, evenly fitting slabs—one slab split. At east end, remains in recumbent position; two bronze hair-pins (similar hair-pins, in silver, are worn at the present day in Georgia), portions of iron ornaments, and fragments of glass bottles. At west end, seated remains; both femurs close up to a corner, as in No. 2 grave; found a small circular flat dish of the coarsest design and make, and sun-dried. Length of grave, width, and depth, as No. 2.

Sixth Grave.—Close to the surface, and had been disturbed at some remote period.

With the exception of No. 1 grave, these tombs were all alike, being formed of four large slabs of sandstone for the sides and ends, and covered with two or three smaller slabs—the bottoms being the natural soil. The largest grave opened by Mr. Beyer was double—one grave being above the other; each measuring, length 8 feet 2 inches, width 3 feet 6 inches, depth 4 feet 8 inches. The burial-ground extends over a surface of about four to five acres, at the foot of a hill range.

Mtzhetha is reputed by the Georgians to be the oldest town in the world. It is very prettily situated on the left bank of the Kour, and just above one of its tributaries, the "Aragua." It

is surrounded by high hills, some being picturesquely capped by ruins. The present village consists of a goodly number of small habitations and "Doukans" (provision and wine-shops) scattered about, in the midst of which rises a high battlemented-wall which encloses the Cathedral and some insignificant buildings for the accommodation of the clergy. The first cathedral at Mtzhetha was erected in the tenth century; it was destroyed by Tamerlane, and was built, as it now stands, by the Czar Alexander, in 1414-24.

In the "History of Georgia," by the Tzacantha Wakhoncht, it is stated that Mtzhethos, son of Kharelos, son of Tharzamors, son of Tharces, son of Avunan, son of Japhet, who was the son of Noah (this scarcely agrees with the tenth chapter of Genesis), built a town named Mtzhetha, at the angle of the junction of the Mont Corea* and Aragoa. It appears that the rule of Georgia commenced under the dynasty of Khartlos, then came the Nebratides, then the Arsaces, the Thosroydes. The Dagrattides came to the throne A.D. 575, which they have occupied uninterruptedly (notwithstanding the Byzantine, Persian, and Turkish invasions) until the occupation of Georgia in 1810 by Russia. But to their possession of the throne must be added the continued line of monarchs up to the sixth century, and then we find the sovereignty to have lasted during a period of 2245 years! The kings were crowned and buried in the cathedral at Mtzhetha during many centuries.

It is believed in Georgia that Alexander in person conquered the country (B.C. 336 ?). After the battle of Achilles, "Erbice," B.C. 331, Alexander followed up his victories over the valley of the Araxes, and entered Medea; but he despatched a force into Georgia. At that time the Georgians were proved to be the most abandoned of people. Debauchery of every kind, including incest, was common among them; they sacrificed human beings and ate the bodies. In his work on "Transcaucasia," Haxthausen states—"Little is known of the paganism and mythology of the ancient Georgians. Sacrifices were made on the mountains; and on sacred heights, human sacrifices. St. Nina threw down the altars of paganism, and on the same heights were erected Christian churches and crosses. Christian holidays superseded the pagan ones, but the dancing and pastimes remained." Also—"St. Nina, who introduced Christianity into Georgia, A.D. 423, found remains of human victims; and her history relates, that after several vain efforts to dissuade the Georgians from sacrifices of all kinds, she succeeded in inducing them to discontinue the immolation of human victims."

Thus it has been asserted that the Georgians made human sacrifices during a period extending over seven centuries! The

* The Kour.

burial in a seated posture was practised by the Jews, but the fragments of glass and relics found point to Greek influence.

I am inclined to think that the burials at Mtzhetha are of the very earliest period of Christianity, and belonging to a pagan people. An Archaeological Society is in course of formation at Tiflis, the capital of the Caucasus, and we may early expect to receive interesting reports upon further explorations at Mtzhetha, and at other places in Transcaucasia.

DISCUSSION.

The PRESIDENT observed that amongst the skulls procured by Commander Telfer was a well marked example of the so-called "macrocephalous" crania of Georgia and the countries round the shores of the Euxine. These skulls, whose deformation precisely resembles that of the so-called Titicaca skulls from Peru, have formed the subject of an excellent monograph by Professor V. Baer, and they are of particular interest as affording an instance of the persistence of the same custom of deformation from before the time of Hippocrates to very near, if not quite to, the present day; whilst at the same time it has been common to Western Asia and Western South America, a circumstance that perhaps might be regarded to some extent as favouring the views of those who advocate the hypothesis that America was at any rate partly peopled from the older continent.

The SERPENT in CONNECTION with PRIMITIVE METALLURGY. By MISS A. W. BUCKLAND.

(ABSTRACT.)

THE writer maintains that a curious connection may be traced between the early worship of the serpent and a knowledge of metals; and, believing that such connection has hitherto escaped notice, she attempts in the present paper to investigate its origin and nature. A large number of the old serpent-myths represent this reptile as associated in some way with precious metals and precious stones; the serpent constantly appears as the guardian of hidden treasure and the revealer of secret knowledge; whilst the deities, kings, and heroes who are either symbolised by the serpent, or supposed to partake of its nature, are commonly described as the pioneers of civilisation and the instructors of mankind in the arts of agriculture and mining. The ancient Indian Indra, the Chaldean Hoâ, the Egyptian Kneph and Osiris, and the Mexican Quetzacoatl are examples of such divinities. In seeking to explain the origin of this widespread veneration for so deadly a reptile as the serpent, the writer remarks that the animals which were anciently objects

of veneration were generally those which had rendered, or were supposed to have rendered, some signal service to man. Hence she is led to believe that the serpent must have played some part in aiding man in the original discovery of metals. It may be supposed that in recognition of this service the serpent was at first assumed as a totem or emblem, and then came to be venerated, and even worshipped, as a distinguished benefactor of mankind. According to the writer, a careful study of the traditional and monumental evidence on this subject tends to show that the early serpent-worshipping Turanian races of the East were the first workers in metal, and that they migrated westwards, probably from India to Egypt and Chaldaea, and thence to Europe and even to America,—bearing the serpent as their totem, and carrying with them an acquaintance with the metals and gems, together with the rudiments of agriculture, navigation, and astronomy, a system of megalithic architecture, and a peculiar mode of sepulture. These Turanian tribes seem, however, to have been acquainted with only three metals—gold, silver, and copper—and had no knowledge of the art of smelting metals from their ores. The writer is disposed to attribute this art to the succeeding Aryan races, who, in many cases, exterminated the Turanians. There are many myths which describe conflicts between the serpent and other animals, in which the serpent is generally beaten; and in these the authoress reads the overthrow of the Turanians by the Aryans. But though the serpent-worshippers were thus conquered and displaced, they left behind them traces of their occupation in tumuli and reptile-mounds, and in myths connected with the serpent and the dragon, many of which have survived even to the present day.

After a few words from the President, the meeting adjourned.

MARCH 24TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The Minutes of last Meeting were read and confirmed.

The following presents were announced, and the thanks of the meeting voted to the respective donors :

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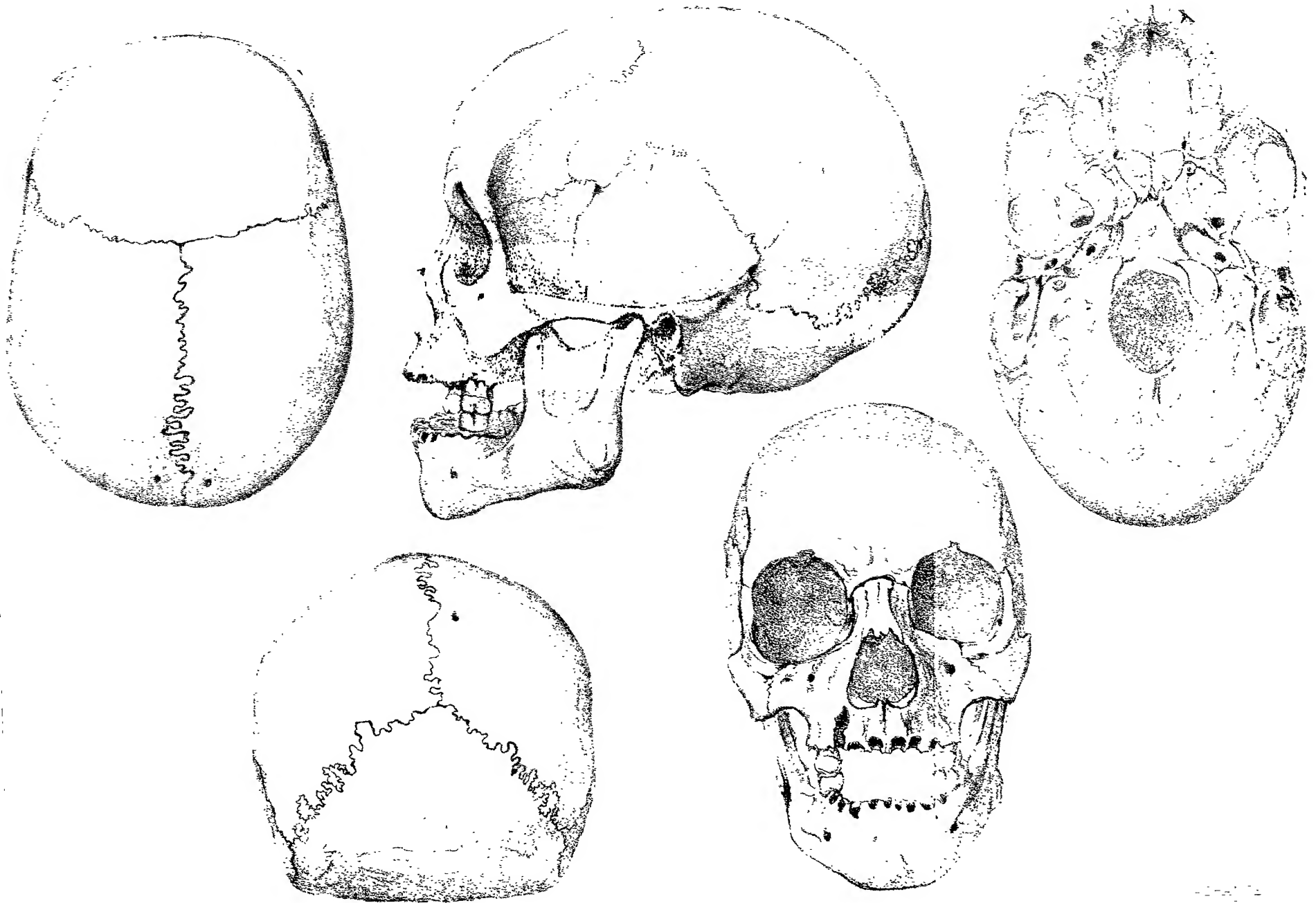
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- From the SOCIETY.—Proceedings of the Royal Society. Vol. xxii, No. 150.
- From the AUTHOR.—Relation of Education to Insanity; Infant Mortality. By Dr. Edward Jarvis.
- From Dr. EDWARD JARVIS.—Fourth Annual Report of the Board of Health of Massachusetts.
- From OLIVER WARNER, Esq.—Thirteen Registration Reports for 1871. Massachusetts.
- From the EDITOR.—Revue Scientifique, Nos. 37 and 38. 1874.
- From LORD ARTHUR RUSSELL, M.P.—Polynesian Labourers in Queensland; Papers relating to the Fiji Islands; The Deportation of South Sea Islanders; Return—South Sea Islands, June 1873; Correspondence between the Government of New South Wales and the Earl of Kimberley; Measures taken to prevent the fitting out of Ships at Hong Kong for the Macao Coolie Trade; Despatches from Dr. Livingstone, H.M. Consul to H.M. Secretary of State for Foreign Affairs in 1870-1-2; The Cession of the Dutch Settlements on the West Coast of Africa, February 1872; Revenue and Expenditure of the British West African Settlements, Jan. 1871-2-3; Papers relating to the Fanti Confederation (Cape Coast) April 1873; Return—Gold Coast, Parts 1 and 2, June 1873; Gold Coast Despatches from Governor J. Pope Hennessy, July 1873; The Ashantee Invasion and attack on Elmina, July 1873; Further correspondence respecting the Ashantee Invasion, July 1873.
- From the SOCIETY.—Journal of the Asiatic Society of Bengal, Part i, No. 3; Proceedings do. Nos. 9 and 10, 1873.
- From the ASSOCIATION.—Transactions of the Social Science Association, 1873.
- From the SOCIETY.—Transactions of the Historic Society of Lancashire and Cheshire. Vol. xiii, 1872-3.
- From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland. Vol. ii, No. 16.
- From the EDITOR.—Nature (to date).

The following papers were read by their respective authors:

NOTICE of a SKULL from ASHANTEE, and supposed to be that of a CHIEF or SUPERIOR OFFICER. By GEO. BUSK, F.R.S., Pres. An. Inst. [With Plate v.]

THE skull which is now exhibited was brought to England by Surgeon-Major Gore, who has furnished the following particulars as to the circumstances under which he procured it. Mr. Gore states that: "When returning from following up the trail of the Ashantee army on the morning of the 26th November, 1873, we surprised an outlying camp of the enemy, which had been de-



served in such a hurry that the occupants left behind them their arms and ammunition, together with some gold dust, a goldsmith's weighing machine, etc. This camp, a portion of a much larger one, was close to Anafroom, six miles north of Mansee. In a box in one of the camp huts the bones were lying—skull with jaw, long bones of arm, fore arm, thigh, and leg. They were all beautifully cleaned by a process unknown to us. I only brought away the skull and jaw as being of the greatest interest. The whole of the bones were neatly packed together."

With reference to a suggestion that I had thrown out that the skull might possibly be that of a female, Mr. Gore remarks that he never heard of the Ashantees carrying about the bones of women. The latter, in fact, he says, occupy such an inferior position that he can scarcely believe the Ashantees would take any trouble as to what became of their remains. They do, however, he states, preserve the bones of their chiefs, a fact that, according to him, is well known. Nothing, however, is known as to their method of preserving. Chiefs and captains are only buried during the progress of a war. Sometimes they are carried back in baskets, and at other times placed upon biers, where they remain until the soft parts decay away. As a rule, they pack up the remains of their chiefs upon the return of the army, carrying them ultimately to Coomassie. Mr. Gore has heard it stated that the flesh is removed from the bones with a knife, after which they are dried in the sun.

DESCRIPTION OF THE SKULL.

The skull is that of a young person who has not very long cut the three molars in both jaws. The other remaining teeth are quite unworn—well developed, but not large. Only six teeth (all molars but one) remain, but the alveoli of those that are gone are quite perfect, so that it is probable they have fallen out since death. They are all perfectly sound. In condition the skull has all the aspect of one that had been carefully macerated and cleaned by a skilled preparator of bones. It is perfectly symmetrical, and of what might be termed delicate formation. The bones are unusually thin, especially for a negro, and all the sutures are quite unclosed—a circumstance, more especially as regards the sagittal suture, worthy of notice in the negro race. It was this delicacy of structure, together with the comparatively small size, that led me to conjecture that possibly the skull might be that of a female. Weak and delicate, however, as it may be for a negro skull, the muscular impressions are well marked and vigorous, and there is no actual reason for supposing it not to be that of a man. He could not, however, have been a very powerful individual, and was very young—two cir-

cumstances rather opposed to the notion that he had been a military leader among savage troops, in whose commanders either age or personal prowess, we might suppose, would be demanded. We may suppose, however, that the rank of the individual may have given him an importance, independent of his personal qualifications as a warrior. The lower jaw, it is to be remarked, is rather thick and clumsy.

1. *Norma Verticalis*.—Frontal outline vertical but low, then curving evenly to the highest point, which is about an inch behind the *bregma*. The line then curves gently to the occipital spine. Subinial portion of the occipital nearly horizontal. The condyles very prominent, appearing below the mastoid processes. The squamosal suture rises very high in the middle. Zygoma rather slender. Auditory opening large. The spheno-parietal suture about half an inch in length. Temporal line strongly developed in front.

2. *Norma facialis*.—Frontal sinuses faintly but distinctly marked; glabella somewhat prominent. Orbits rounded, measuring 1.6 by 1.4. Nasals rather prominent, forming a median keel; deeply notched at the lower end. Nasal orifice pyriform, with a bifid apex. Canine fossæ deep for so young a subject. The lower border of the orbits is thick and rounded; the upper less so, but not thin. The malar bone is thicker than usual. Alveolar border prognathous, and from the direction of the sockets the incisors would have projected considerably.

3. *Norma occipitalis*.—Outline somewhat ogival, the points of greatest width at about the level of the orbit, and two inches behind the vertical line. No *ossa triquetra* in the lambdoidal suture.

4. *N. verticalis*.—Very slightly phænozygous, and the alveolar border just visible; nasals not seen. Outline evenly oval, slightly expanded on the sides of the frontal, owing to the prominence of the temporal ridges. Coronal suture quite open, very simple. Sagittal also quite open, simple in the anterior and posterior thirds—deeply serrated in the middle third. Least distance between the temporal lines, 4".3.

5. *N. basalis*.—Alveolar border elliptical. All the teeth have probably been present before death, three molars remaining on either side. Teeth not at all worn, of moderate size, but deeply tuberculated. Palate shallow, palatal process of palatals small. Basi-occipital wide behind, and with strongly marked muscular impressions. Condyles, together with the anterior border of the foramen magnum, very prominent, so that the plane of the foramen is inclined slightly backwards. Vaginal processes strong. Styloids small, mastoid processes rather low, but the digastric fossa is unusually wide and deep. The foramen mag-

DIMENSIONS, CAPACITY, AND PROPORTIONS.

				Ashantee.	Mean of Inter-tropi- cal Negro.			Ashantee.	Mean of Inter-tropi- cal Negro.
1	Length	.	.	7.1	7.12	15	Circumference	19.7	19.6
2	Breadth	.	.	5.2	5.12	16	Longitudinal arc	14.5	14.4
3	Height	.	.	6.6	5.43	17	Frontal longitudinal arc	5.0	4.96
4	Postorbital width	.	.	3.7	3.65	18	Parietal "	5.0	4.97
5	Coronal	.	.	4.4	4.38	19	Occipital "	4.5	4.4
6	Parietal	.	.	4.9	4.94	20	Frontal transverse	11.2	11.4
7	Occipital	.	.	4.2	4.14	21	Vertical "	11.9	12.3
8	Zygomatic	.	.	4.9	4.93	22	Parietal "	12.9	12.8
9	Frontal radius	.	.	4.3	4.53	23	Occipital "	12.0	11.0
10	Vertical	.	.	4.5	4.54	24	Capacity, C. I. .	82.2	...
11	Parietal	.	.	4.7	4.72	25	Brain weight, oz. av.	45.4	...
12	Occipital	.	.	3.9	4.15	26	Latitudinal index	.725	.721
13	Maxillary	.	.	3.8	4.15	27	Altitudinal "	.788	.765
14	Fronto-nasal "	.	.	3.3	3.67	28	Gnathic "	0".50	0".52

num measures 1.5 by 1.2. The occipital spine and muscular impressions on the occipital well, but not coarsely, marked.

Annexed are the dimensions, capacity, and proportions of the Ashantee skull. These will suffice to show that it differs in those respects but very little from the average inter-tropical negro skull, according to my own measurements. The principal characteristics would seem to be—1. Its greater altitudinal index or height. 2. The less maxillary and fronto-nasal radii, showing that the face is smaller in proportion than it usually is in the negro. This, however, may in part perhaps be attributed to the youth of the individual.

On the ORIGIN and DEVELOPMENT of the MENTAL FUNCTION in MAN. By DUNBAR ISIDORE HEATH, M.A., Treasurer Anth. Institute.

THE mutual interdependence of all parts of nature, without exception, is the grandest lesson taught to us by science. For a long time Man himself was supposed to stand exceptionally aloof from the mighty realm of all the things outside him. Mind and body, man and nature, the immaterial and the material, the absolute and the variable, the eternal and the perishable, have long been considered as opposite poles of stringent antithesis. Such views, however, are rapidly passing away, it being, in fact, contrary to experience that one pole can be known without the other. The positive philosophy is the philosophy of experience, and it is prevailing.

Two conceptions in particular have, I think, done more than others towards the introduction of the idea of one grand unity including man and nature. One is that of the universal æther, man enveloping and nature enveloping. The other is that of the absolute constancy of the total amount of energy and work in the universe. The theory of a boundless æther, susceptible of vibrations and tensions, which it is also capable of propagating throughout all space, is by this time tolerably well understood, and it is very generally believed that such an æther exists. It is also becoming popularly realised that not only a vast number of inorganic phenomena which depend in any way on light, electricity, or magnetism, but even many of organic sort, such as man's sensation of colour, his hearing of sounds, his smelling of smells, his tasting of tastes, and his feeling of the shapes of things, are all connected with the motions and tensions of atmospheres, vapours, or gases, embosomed in this stupendous instrument, the cosmical æther.

For the purposes of this paper, however—viz., for the study of the mental function in man—it will be sufficient to take into

our consideration only that limited portion of the wide field of universal space and universal matter which connects itself with organisms. We, for the present, confine ourselves to those of the vibrations of the kosmos, which find themselves at a definite time being propagated along organic channels called nerves, and which are capable of being presently stored up in the brain in the potential forms of cerebral strains, stresses, and tensions. It is the concurrent progress, side by side, of many branches of science which alone makes the progress of the generalising or higher sciences possible. A very few years ago the very notion of potential energy, and of its being stored up in the brain, would have been utterly incomprehensible. We mean by the phrase, that as water can be laid up potentially in the reservoir ready to originate a downward motion, as capital can be laid up at the banker's ready to employ or originate the motion of labour, and as skill in medicine, skill in engineering, skill in statesmanship, are stored up in the minds of doctors, engineers, and statesmen, so the physical power of producing many sorts of motion can be stored in the brain. This also I take to be generally apprehended and accepted—at any rate, among the students of physical science. It is now seen, then, that the function of a nerve is to receive from anywhere in all space, and from anything in all nature, something not in any degree at all similar to sights and sounds, but merely a flux of physical vibrations, tremors, strains, and stresses, all of them of a mechanical nature, all of them in all they do following all the laws of mechanics applicable in the premises.

Tracing these physical motions, or tensions, through their channels of least resistance, we find two clear facts. First, that they physically end in a brain; secondly, that their function becomes mental. It seems, therefore, clear that somewhere on the line between physical origin and mental ending there must be a psychoplasm or point of change.

We have most of us heard of protoplasm and bioplasm, and the word psychoplasm will be found, I think, as useful as either of them in mental science. Protoplasm is the earliest organic matter, bioplasm is the simplest living matter, and the word psychoplasm is equally required for the first matter which shows any mental function. In reference to this idea of psychoplasm, it is obvious that wherever there is a second there must be a first, and thus wherever there is a full-grown mind there must be a first entry somewhere of nerve vibration upon that mind. In other words, there must be psychoplasm.

The whole substance of the brain is often indeed loosely spoken of as showing mental functions. Whether this be so or not, the growth of the functions is the subject of this paper, and

I think I can see more than one advantage in the theory which supposes the origination of mental function to be in a special manner located in a film of psychoplasm enveloping the surface, and only physiologically, not mentally, one with the deeper substance of the brain. In directing most especial notice to the surface as distinguished from the deeper substance of the brain, I am in accordance with the most advanced results with which the science of physical mathematics has lately been enriched. The idea of matter acting at a distance, as gravity and electricity are popularly supposed to do, is now every day less and less accepted by cultured minds, and the phenomena of electric and magnetic induction, and even of gravitational attraction, are now more and more explained on the theory of action only between contiguous particles, and it is found, as an actual result of the mathematical calculations, that one result of this is to bring into great prominence all surface phenomena as distinguished from the phenomena within the body of the substance under investigation. As a familiar instance, I may mention that when electricity is imparted to an insulated conductor, however thick it may be, the only measurable potentiality that results is still, nevertheless, only on the surface. This used to be laid down merely as an experimental fact, but can now be very readily explained to be a necessity. It also used to be merely mentioned as a fact that this surface electricity cannot exist without what they called the *induced* surface electricity at the other side of the film of insulating matter. This also can now be explained, and the activities at the two surfaces are very analogous to what I wish you to understand may take place at the surfaces of the psychoplasmic film.

The theory that between the vibrating power-producing outside world and the tense power-holding brain there exists a film of psychoplasmic matter capable under certain circumstances of feeling pleasure is, it must be admitted, not so generally accepted as that of the aether, and is, in fact, I believe, somewhat novel. Nevertheless, thousands of experiences day by day and minute by minute show that some at least of our bodily members actually do feel pleasure, so that the mere fact of psychoplasm being material is not in itself any bar to pleasure being felt by it. We need not, however, delay ourselves in searching for the seat of sensation, whether it be in the whole organism, in the brain alone, or in the hypothetical film enveloping the surfaces of the brain and probably of some other parts of the organism. The main point is to lay down what is the function we may suppose it to perform. Now, this function, whatever it is—the function, I mean, of the alleged psychoplasmic seat of sensation—will evidently be divisible into two divisions. In the first

place there will be the function in reference to the millions of every-varying fluxes poured into it through the nerves from outside nature. Next, when these fluxes have been carried through to the brain, and a portion of them reflected and returned back to the nerves from the brain side of the psychoplasmic film, we shall ask whether the function of our seat of sensation towards these is the same in all respects as that towards the original flux from the side of the world?

The mental function of the earliest stage of the psychoplasmic film, if there be any, must be the earliest and simplest possible function of mind—viz., that of a merely vague feeling of pleasure and pain. The different pleasures or pains, though vague, would be suitable to each flux—a sunlight, for instance, on the earliest mind producing a gentle pleasure—fire approaching too near producing great pain. On a basis of mental function so slender as this we must endeavour to see how the mind of a Sir Isaac Newton may have been step by step built up.

In order to this, however, we must now see how the brain from the inward side may be supposed to help in strengthening and enlarging the incipient mental functions of the psychoplasmic film. Let us fix our attention upon a single flux, due, let us suppose, to the very common case of the incidence of a ray of light, wherein seven hundred million vibrations are made every moment somewhere in the outer world. It is clear that this flux will be carried through to the brain almost entire, so far as its physical properties are concerned, and that, in accordance with the ordinary laws of mechanics, it must be there divided into subfluxes and compounded into superfluxes in perhaps millions of ways, according to the conditions of the cerebral medium on which it impinges. By a flux is meant a bundle of forces acting through a small area for a small time as distinguished from a single ideal force acting instantaneously on a mere ideal point. A subflux is a portion of a flux. A superflux is an aggregation of fluxes. These subfluxes and superfluxes, being generally vibrations, are reflected according to mechanical laws, and it is clear that as they again pass through the psychoplasm from the brain outward, the feeling, whatever it is, due to the return passage must be of a more complex kind than the simple original sensation of the undivided flux. Supposing, for instance, that the object in nature causing all this action was a horse. The colours, the shadows, the sheens, the shapes, the sizes, etc., of each limb, must make up a confused mass of, let us say, fifty sorts of vibrations at the first entry from without inwards. Sensation, it must be remembered, is the vague pleasure felt at this first entry. Perception is the name given to a far higher mental act. Perception—the distinct perception of the horse—consists in

the recognition of these fifty distinct sensations, combined in proportions corresponding with nature. How is it, then, that perception arises? Naturally, because fifty subfluxes or superfluxes must, as we have shown, pass outward, and the psychoplasm must feel them.

Thus, then, we have arrived at a very remarkable deduction from our premises. We did not premise the brain to be itself either sentient or percipient. On the contrary, we stated it to be acted upon solely according to physical laws. Yet merely by considering how the subfluxes and superfluxes must be grouped together, we find the mental function very different on the inside and the outside of the film. At the outer surface sensation arises. Why does it not at that surface rise into a higher mental state than sensation? Because the fluxes are not subdivided and recompounded. And, if it be asked why they are not subdivided and recompounded, it is because on that side there is no organism the function of which is so to subdivide and recompound them. At the inner surface, however, the brain exists. Action is cerebro-mental, and sensation rises into perception.

The next highly-important step in the development of mental function to which I shall call your attention is the origin of volition.

That a dead man cannot stand upon his feet is well known, and the reason is obvious—viz., that the forces from without tending to his fall are equilibrated by the resistance of the brain in the living man. Thus, then, even in standing upon our feet, force acts from without through the psychoplasmic film inwards, and force acts from within through the film outwards. What, then, is the function of the film under these circumstances? Simply as before, to feel the passages of the forces. The name we give to the feeling of the force from within is volition.

We must very carefully distinguish between the actual brain force connected with volition and the volition itself, which is a mental function. The force may be doubled, trebled, quadrupled, and accurately measured. There is no reason at all to suppose that the volition is thereby doubled, trebled, etc., and it cannot be measured. Many will object to such a simple explanation as I have given of the origin of volition as a sensation, because they have always been accustomed to consider volition to be a force. Many people consider pleasures and pains to be forces. They argue that if fright is able to kill a person, it must, somehow or other, be a force. So, because the sensation of willing is felt just before moving the arm, they think it is therefore the volition that moves the arm. In fact, there is a floating opinion that what is called psychic force exists—viz., so far as I under-

stand it, an action without a reaction—a force which can produce material motion, but cannot be itself produced by material motion. The distinction which I make between brain force and the feeling felt when that force passes through the outer surface may, I hope, be useful to many in helping them to reconcile themselves to physical philosophers in this matter, for it must be seen that brain force does and psychic force (as I understand it) does not fulfil the law of the conservation of energy.

I shall come back presently to this question; but meanwhile an important physical distinction between sensation and volition may here be noted—viz., that a force is not a vibration, and the passage of a force does not take place through the means of the passage of a vibration, but is a direct pressure at right angles to the surface of the brain. But here comes into play a most important fact—viz., that we can prove by mathematics that the action of such a pressure perpendicular to the surface gives rise at once to a tension in the plane itself of the surface. Now, the neural tremors—at any rate, those that enter from the retina—are also in the plane of the surface. Hence is explained that a volition seems a sort of feeling. In itself to will seems unconnected with to feel. Yet we feel our volitions. The reason, I say, is because the perpendicular pressure gives rise mathematically to surface tensions.

Out of the simple theory of the film we have thus already arrived at a view of the origin of a very considerable amount of mental function—viz., all that is comprised in sensation, perception, and volition.

The school of Berkeley and the school of Locke possess, each of them, numerous adherents, and it behoves me to remember that they will, each of them, have been lying in wait to catch me from opposite sides in what I have said. That pleasure can be felt by matter when organised in certain ways, as, for instance, by certain parts of the human body in their normal conditions is neither more nor less than a fact of consciousness. Still, I admit that we must be careful to state this fact in such a way as neither to imply materialism in the psychoplasma to the exclusion of psychism, nor psychism to the exclusion of materialism. It is a fact clearly proved by Berkeley that we only know matter from sensations. This, in the phraseology I am using, would be expressed by saying we only know tensions and vibrations from psychoplastic function. It is equally a fact proved by Locke that we only know sensations from the strains and stresses of matter borne in upon us through the nerves. In other words, psychoplastic function corresponds to the tensions and vibrations. This seems indeed a wonderful dilemma, and, in stating it, we approach the

subject of how much correspondence there is between man and nature. Is man the dream and nature the reality? Or is nature the dream and man the reality? Is vibration the primary and sensation the secondary? Or is sensation the primary and vibration the secondary? We have to seek, then, for some way in which the mind may realise these two apparently contradictory facts. The best way I know of is that which I have here laid down—viz., by the conception of a psychic film. The outer surface of the film must be conceived as accessible to the outward world exactly as far but no farther than neural fluxes from the outward world represent the world. It is thus that Berkeley must be satisfied. The inner surface, on the other hand, is accessible to groups of subfluxes and superfluxes, but these are derived immediately by heredity from the wholly material brain; and the mind acquires, therefore, from a hereditary material organ, perception and all the many mental functions which consist essentially in the groupings of sensations. It is thus that the school of Locke must be satisfied.

Having now arrived at the stage in mental development where sensation, perception, and volition are in co-existence, a very large onward step indeed is next to be examined into, no less a step than the appearance of skill—*i.e.*, the passing from simple volition to a reasonable volition or volition with a purpose. Suppose a person to be playing cricket. A skilful reasonable volition is that by which at a particular moment he raises his bat and brings it down again with the purpose of striking the ball. The first element to be considered is a large number of fluxes rushing inwards, one after another, from the world, as the ball arrives at different parts of its journey after leaving the bowler's hand. These all passing inwards to the psychoplasm create a feeling there. They then pass into the brain, each of them producing there large numbers of actions. One of them in particular produces the co-ordinate set of actions corresponding to the striking of the ball in nature. This last is the strongest of all the backward actions, being a large muscular exertion. The feeling in the psychoplasm due to it dominates over the previous ones, and taken together they are called skill or volition with a purpose. The exact moment when this skilful co-ordination takes place is the result of cerebral experience coinciding with mental experience. Experience is based upon the fact that the co-ordination which gives most pleasure is remembered more than others, and its cerebral accessories being thereby strengthened, it will have more chance of being repeated than other co-ordinations under similar circumstances.

It may be foreseen that a general objection touching all I have said may be made to the symbol of the flux, which to the world

in general is still a novelty. The fact is, however, that the conception of a force applied to a point is wholly ideal. Mathematicians may or may not rightly enough introduce it for their own high purposes, but in practical physiology, at any rate, there are no points, and consequently no ideal forces. However minute the transverse section of a nerve may be, it may no doubt be made visible as an area under microscopes, and the very conception of a vibration or tremor implies a spatial amplitude covered by the vibrating matter. This observation is of great importance in realising the development of mental function, as it quite contradicts the notion that the mind must begin necessarily from the simplest and develops up to the more complex. The point would be simpler than the area no doubt to begin from, but the beginning must, nevertheless, be in fact from an area.

The actual order in which the different elements of mental function are practically developed in the individual man I do not think to be sensation, perception, volition, experience, and skill, which is the order in which I have taken them for convenience's sake. I consider sensation and volition to come first for three reasons. They seem to appear first and to be most necessary for the alimentation and continued existence of the lower animals; they are less complex by far than the others; and they do not seem to come by tuition to children. We do not ordinarily require to teach children to have a will of their own. Perception, however, as a matter of fact, comes by a long process of teaching. The colours, the shapes, the motions, etc., of the one object perceivable are presented over and over again to the child's attention separately.

The principal remaining function which need be considered in so brief a sketch as the present is that of knowledge and thought. Knowledge is a perception, but it is a perception not of objects of sense alone, but of a very large number of relations between and ideas about all the fluxes poured in upon the psychoplasm from the world and all their resulting subfluxes and superfluxes. Ignorance may arise from not having these relations presented to the mind at all. In such cases the most intelligent minds will remain ignorant. But again, if these ideas or relations be presented when they are new, the fluxes in which they are carried in are not easily arranged into sub and super fluxes in the brain. The difficulty felt during the arrangement is called thought. The mental ease felt after channels of passage have been arranged is called knowledge.

Having based so much throughout this paper on the idea of the flux, I must again call your attention to the absolute physiological necessity that cerebral resistances must act, not at points,

but at areas, especially as the argument I am now about to bring forward will elucidate also what I mentioned before about fright and other mental emotions having powerful effects adverse to life, and therefore being forces, which I denied them to be. Reverting, then, to the instance of the cricketer. At the moment of his stroke the force necessary is immediately supplied by the blood in the brain acting over a certain area, and, if I remember right, the potentiality of about a quarter of a grain of carbon is used up in the operation for a stroke of average strength. The strain to all the parts will of course depend upon the amount of time given for the operation and also upon the amount of organism which acts as cushion in easing the recoil. Now, the smaller the transverse section of the nerve the smaller is the area of the cushion, and it is clear that for the preservation of life there must be a limit physiologically necessary to the indefinite reduction of the area of the section. The lightning which overthrows many tons' weight of brickwork in a millionth part of a moment has a very moderate tension. The destructive effect is due to the shortness of the time of action and the small size of the area acted on. The action of fright is generally a very sudden one, and the nerves at the previous moment may very probably be in a contracted state. All these things are matters for mechanical calculation, but certainly, when many different sets of vibrations pass along a nerve which terminates in psychoplasm, some of them, either by their extra velocity or through the small size of the resisting cushion may have such physical qualities as are capable of causing a fissure in the mechanical texture of the thin psychoplasm, and it is more reasonable to attribute the consequent death to the action of these vibrations than to the mental sensation called fright, which is the mere name of the feeling accompanying the action of the force.

In all that I have hitherto written I have taken the imaginary case of a sort of Robinson Crusoe child, and, dropping all mention of assistance from parents, have shown the sort of road on which the development of the mental functions might under such solitary circumstances take place. I am, however, far from supposing that in any one individual case such an unaided growth has ever, as a matter of fact, been practically realised. Slow would be the progress of mankind if ancestors did not lay up potential mental as well as bodily function for their progeny in the substance of their reproductive cells. In practice, a large amount of the mental growth attained in each individual is due to heredity, and a large amount to the direct and indirect teaching of fellow-creatures. If this paper, therefore, on the development of mental function is to correspond to its title I ought on each of these subjects to say something; but to say all that might be said would require volumes.

Heredity begins, then, with the union of the two parental cells. When we consider what I might almost call the pathological effect on the whole organism of this mere union of most minute cells we shall be tempted to think that these cells in their junction are torn off with some violence from close connection with their respective psychoplasms, so large seems the energy drawn out from the parents in proportion to the apparently small physical result effected. We know that in nature there is an action very similar to what I suggest. When, for instance, two conductors charged to very different potentials are brought close together, the difference of the tensions (commonly called the attraction of the electricities) is such that it tears off the metal or material in fine powder, and this powder springs across the intervening space, carrying with it a charge of electricity. Now, a vast number of mental phenomena—for instance, sympathy, the yielding to the opinions of others, the accepting evidence, the emotional sensibility of crowds, the love of admiration, etc., etc.—all point to the idea that the psychoplasms of different individuals are parts of one universal psychic medium. Moreover, if this be not so, the mind must act at a distance, a hypothesis which is being abandoned in the case of matter. It is well known that Farady, under the name of “Lines of Force,” considered every human being to be connected by myriads of electrical tentacula with all parts of the medium, and if the sexual psychoplasms are at different tensions during the junction of the cells there will be of necessity a tendency to tear off portions of actual matter, as in the case of electrical discharge. Mr. Herbert Spencer has with very great acuteness indeed described the mechanical molecular phenomena which necessarily result from the union of the cells. He shows us that growth, development, and function are due to the forces in these cells not being able to balance each other. If the forces all balance each other there is no residual force left, for instance, to pull in nutriment from outside. The pulling in the nutriment tends at first to balance the forces, but the nutriment itself is a force which immediately deranges everything around it, leaving the embryo larger, but with forces still unbalanced. Towards the explanation of such wonders it must be remembered that some of the molecules in the matter of these cells contain each of them no less than nine hundred rapidly moving atoms, giving rise of course to millions upon millions upon millions of ever-changing unbalanced sets of forces. The astonishing result is that no balance can take place till the type of the species is arrived at, viz., at adult age or cessation of growth in the individual. Wonderful indeed is it to be able to see so clearly how in these two united cells, not bigger than the point of a pin, life

is the result of the contest between the fluxes from without and the internal forces from within.

Heredity is a fact of experience ; but if there are a thousand different sorts of protein, each of the parental bodies may probably be composed of its own favoured sorts, and if a single atom of phosphorus or sulphur may bind into a unit five or six of these isomeric molecules, the complexity is increased million-fold, and it is natural to suppose that every human body may consist principally of its own species of these physiological units which thus pass to the offspring. Here there would be some explanation of material heredity, for the forces in these units would not get balanced except when organic shapes suitable to the balancing position were arrived at. In other words, when the parental organism was reproduced.

The immediate question, however, with us at present is the effect of heredity on mental function. Now, in this paper I have laboured to represent to you the three elements of all mental function, viz.—first, the fluxes from without ; secondly, the action between these and the psychoplasm as they pass inward ; and thirdly, the action between the brain and the psychoplasm as the sub and super fluxes of the brain pass outwards. In all these the millions upon millions of subdivisions and recombinations of the fluxes in the brain must depend largely on the physical structure and state of the brain, and therefore be subject to the action of heredity. The events by which our ancestors gained their own experience caused modifications in their own brains. These modifications, being material, are transmissible. This is Mr. Spencer's doctrine of "organised tendencies transmitted as a heritage." The opposite doctrine, that of innate or *à priori* forms of thought, or even innate knowledge, has long maintained supremacy. A sufficient objection to it is that it tells us nothing useful. If the supposed *à priori* knowledge be coincident with that which we derive from experience, then experience suffices to teach it. If not, it must be useless for guidance in the experienced difficulties of life.

The last of all the divisions of my subject is that of the increase of mental function due to that action of our fellow-creatures which goes commonly by the name of education.

With respect to education, then, we owe to it in the first place the whole of the facts which we receive on the evidence of others. Practically, this is equivalent in most cases to all the facts we receive in any way into our minds. The next grand result of education is to supply us with a vast number of words which do really in the short compass of a word embody very often most complicated truths. A word is a flux, because it either enters in through the ear or through the eye. The proper choice

of words, then, carries with it the proper choice of fluxes. By the proper choice I mean the choice of those which are most easily re-arranged as sub and super fluxes in the brain. Take the example of the word "ray" as the symbol of "light coming in a straight line from the sun." This symbol is now known to be a bad one. Light does not come from the sun. Vibrations come from the sun. Vibrations do not come in straight lines. The symbol now used is the word "wave." A wave is not the symbol for anything which any one single particle can do. It is the symbol for a certain form of *vis viva* transmitted between contiguous particles. All the wonderful new truths, then, which the study of vibration waves has taught us, depended originally on our use of the good symbol "wave" and the rejection of the bad symbol "ray." The result is an instance of mental function as due to education. Some of the words I have myself used throughout this paper are symbols of new ideas. The question is, are they good ones or bad ones? Do they help us to group our thoughts together or do they not?

DISCUSSION.

MR. JEREMIAH, JUN., was reminded of a work on "A Theory of Natural Philosophy," by J. H. Porsley, published in London in 1836, wherein are attempted to be explained many, if not all of the phenomena mentioned by Mr. Heath. The word flux does not occur, but phrases as vague and unstable are put forward, and to the author's idea perfectly satisfactorily; but Porsley's explanation of the sensations and functions of man and properties of bodies, although assisted by elaborate diagrams, contains not a particle of science. He did not wish to be considered insensible to a feeling of gratitude for the paper just read, but to fully appreciate its merits it must be studied, and, if possible, it must be seen if the vaguenesses of other hypotheses are as great as the learned author of the paper appears to believe. Psychoplasm is certainly not a good term; it is quite an incomprehensible term for scientific purposes.

The PRESIDENT offered a few remarks, and

REV. DUNBAR HEATH, in reply, said that no experimental localization of intellectual functions in any particular ganglion of the brain could have been carried so far as to prove that the substance rather than the surface of the ganglion was the seat of the function. The advantage gained by localizing mental function at the surface is that the undivided neural tremors are of course received at the surface previous to entering the substance. If, therefore, the mind were localized deeper within the brain, all that it receives must have been first decomposed and recomposed by the brain, and therefore the sensation of the vague undivided tremors would be impossible, as they would have disappeared, owing to the brain action previous to arriving at the seat of mind. If sensation be due to the receiving

the undivided tremors, and if the tremors begin to be divided immediately at the entrance into brain substance, it seems a clear necessity to conceive the seat of sensation to be at the surface.

On the MENTAL DIFFERENCES between the SEXES. By W. L. DISTANT.

THE question I propose to discuss is one which is intimately connected with the progress and evolution of the race. It is one which at the present day possesses more than usual interest, owing to the almost universal demand for higher education and more intellectual estimation of women. In endeavouring to ascertain what are the mental differences between men and women, I do not propose to take any cognisance in this paper of what are described as intuitive ideas and sexual intuitions, nor to pass any opinion upon the same, but rather to aim at dealing only with physical facts, in so far as my knowledge of the present progress of science in this field will enable me to do so. Nor can any claim be made that this paper has mastered the situation, but rather it is put forward as a note of interrogation on the subject. The question may be roughly stated thus. Is there clearly proved to be a mental difference between the sexes? And is that difference of kind or only of degree?

It is a well-established fact that the male brain is heavier than that of the female, and this even antecedent to the time of birth. Dr. Robert Boyd, who compiled statistics from 2,086 cases, 1,025 males and 1,061 females examined in St. Marylebone Parochial Infirmary from the years 1839 to 1847, observes: "The mean weight of the male brain was, at all periods, above that of the female, which was the probable cause of the large number of still-born male infants as compared with females, 51 to 32, and the necessity of resorting to craniotomy in five instances in the males only.* The excess also exists in each of the several portions of the brain, Dr. Peacock writes, "the cerebrum, the cerebellum, with the pons varolii and medulla oblongata and the cerebellum alone, being uniformly heavier in the male than in the female."† Lauret measured the heads of two thousand individuals and found that both in diameter and circumference the female head is considerably smaller than the male.* This has been further worked out by Dr. J. Cleland, who, in his paper "On the Variations of the Human Skull," in observing that if the head be balanced on the vertebral column it must change its position with growth, and be gradually tilted up more and more

* "Philosophical Transactions," 1861.

† "Monthly Journal of Medical Science," 1846.

‡ Buchner, "Force and Matter," p. 112.

from childhood to adult life, to throw more weight behind the condyles, as the frontal and temporo-sphenoidal lobes of the brain increase in size and the face becomes heavier, the greater the growth of these parts the greater the tilting up, remarks also that the female skull is much less tilted back on the condyles than the male, being in this, as in various other respects, more child-like than the male skull.* Schaffhausen in his lecture "On the Primitive Form of the Human Skull," states, "It also struck me that we so frequently find in ancient female skulls so decided a prognathism that they almost resemble the Ethiopian skulls, and have been mistaken for them. The most prognathous skull in the cave of Frontal is that of a female. This may be simply explained from the fact that the female skull retains in its growth more signs of imperfect development than the male, namely, the projection of the parietal protuberances, the lesser elevation of the frontal bone, the shorter and narrower cranial base, and with the latter is connected the more elliptical dental arch and the inclination to prognathism."† Ecker sums up his investigations on the characteristic peculiarity in the form of the female skull as follows:—

1. The slight elevation of the cranium.
2. The flattening of the vertical region.
3. The perpendicular forehead, the result of the predominance of the cranial roof over the cranial base, &c.‡

The European female brain as a rule weighs on an average four to six ounces less than the male, and this difference, according to Solly, is already perceptible in the new-born child.§ Now it is generally allowed that material growth of brain is correlative to mental capacity, and these facts therefore go to prove that at present the aptitude for mental achievements is decidedly possessed by the males. Still, as Dr. Peacock states, in accordance with the remarks of the Wenzels and Tiedemann, the female brain, though absolutely lighter than that of the male, maintains a higher proportion relatively to the weight of the body,|| and Professor Bain also observes that the mere propulsion of the muscles demands a large supply of nerve force, and animals whose muscles are large and active have correspondingly large brains.¶ Other reasons, however, I think can be adduced to account for the differences in male and female cerebral manifestations.

Investigations have also gone to prove that in primitive races

* "Philosophical Transactions," 1870.

† "Anthropological Review," vol. vi, p. 425.

‡ "Anthropological Review," vol. vi, p. 356.

§ "The Human Brain," p. 162.

|| "Monthly Journal of Medical Science," 1846.

¶ "Mind and Body," p. 20.

the brain of woman approximates more closely to that of man, but although fresh facts slowly accumulate, the amount of evidence is perhaps still too small to allow of dogmatic assertion on the point. The weight of evidence, however, decidedly inclines to this assumption, and, as Vogt writes, the difference between the sexes, as regards the cranial cavity, increases with the development of the race, so that the male European excels much more the female than the negro the negress. Welcher confirms this statement of Huschke from his measurements of negro and German skulls.* The tables furnished by Dr. Jos. Barnard Davies of the brain weights of 762 males and 377 females from various parts of the world also show the same result. The difference is greatest in the European and least in the African race.† Accepting these results it would appear that man has advanced somewhat alone in the intellectual evolution of the race; that the causes which produce a higher masculine cranial development are not felt or are powerless to produce the same effects on the female organisation. That the advance of man is clearly marked by a higher form of skull and increase of the cranial cavity seems borne out by all recent investigations. Already, says Herbert Spencer, the brain of the civilised man is larger by nearly thirty per cent. than the brain of the savage. Already, too, it presents an increased heterogeneity, especially in the distribution of its convolutions.‡ Mons. Paul Broca has perhaps made some of the most valuable contributions to our knowledge on this point. From his examination of a number of old skulls he has proved that the cranium of the Parisian population has in the course of centuries gained in capacity.§ He has also given some reliable information as to the effects of mental training in increasing the volume of the brain. He took as his subjects twenty attendants and eighteen pupils of the hospital of Bicêtre, and his cranial measurements showed that though the attendants had the advantage in age, the pupils surpassed them in cranial development, and that the increase was principally in the frontal lobes of the brain, which are taken as the seat of the highest faculties of intelligence.|| Before proceeding further it will perhaps be best to meet a probable objection that whereas not only quantity but quality (convolution, etc.) of brain denotes the higher intelligence, in discussing only weight of brain, I have not proved sufficiently the mental divergence of the sexes. Admitting that the nature and distribution of the convolutions are indicative of mental development or

* Vogt, "Lectures on Man," p. 81.

† "Philosophical Transactions," 1868.

‡ "Principles of Biology," vol. ii, p. 502.

§ Vogt, "Lectures on Man," p. 90.

|| "Nature," vol. viii, p. 152.

capacity, the form of the skull and incidental cranial capacity have still been shown to improve with higher mental exertion, and the brain itself seems also affected by the same cause. Albers, of Bonn, states that having dissected the brains of many persons who had for years undergone much mental labour, he found in all of them the substance of the brain very firm and the grey matter as well as the convolutions highly developed.* We have thus seen that as man progresses from a primitive condition he exhibits a higher cranial capacity, and that there is evidence which tends to show that woman approximates more closely to this in his earlier stage, and departs from it more as he advances. Can this difference be explained as the result of external conditions and masculine selection? If so, how far? And are there physiological conditions retarding the same?

The principal external conditions to be considered are such as in a somewhat complex condition of society would form the qualification necessary for woman's estimation in the same. We must, therefore, take a retrospective glance at her position in relation to man during his progress from a ruder existence. Among savage races we usually find a somewhat equal distribution of labour, both in nature and quantity, between the sexes. The wants, though pressing, are few, and equally needed by the male and female, and although the position of the woman may be in the very lowest and most degraded state, still mentally she is little surpassed by her lord, who rules by a purely physical superiority. But as in the struggle for existence he relies less upon physical conditions and more upon social organisation, and the assistance derived from the developing inventive powers of the mind, he becomes less brutal and to woman more forbearing. She is no longer almost the common property of the many, and favoured by man's improved ideas she ceases to be merely a slave, but runs some risk of becoming only an ornament or a plaything. Now in the struggle for the possession of the female, other things being equal, the man with the larger brain has the advantage. He must possess mental capacity of some sort to arrive at any position in the tribe or city, and without the possession of this position he has little chance of selecting his companion from the women held in the greatest esteem and highest estimation. The course of sexual selection thus tends to mentally strengthen the males, but applies in an inverse ratio to the females. Woman becomes sought after for her beauty, as the varying standard of which may happen to be. Thus, according to Winwood Reade, the Persians admire slim women; the Turks fatten girls for the harem, a custom which also prevails in the Bight of Benin and in certain parts of East Africa; the Tartars

* Büchner, "Force and Matter," p. 112.

admire small oblique eyes (Vambéry); the tawny Moors, according to Caillie, prefer women whose front teeth project; and it would take pages to enumerate the fashionable disfigurements which prevail at various parts of the world—the teeth made black or blue, the feet crippled, and the skull compressed.* Even amongst ourselves we find the same power of sexual selection at work. Ecker, after describing the differences between the male and female skulls he had examined, remarks that the characteristic cranial profile may be seen in especially handsome living female heads, and whoever has once paid attention to these peculiarities will generally find them. We need not, he says, be surprised that we do not find this female type equally pronounced in every head, just as little as we find in every male figure the masculine *habitus*. But that this form occurs so well pronounced in heads which we designate beautiful and womanly proves that this form is typical for the female sex.† From this it appears that our standard of female beauty consists, amongst other qualifications, of a more or less perpendicular forehead, the result of a predominance of the cranial roof over the cranial base. In man we do not consider this the highest form of skull, but for how long have we been selecting, perpetuating, and increasing this type in the female cranium.

We have considered the action of education and mental training in affecting the cranial development of man. Have women gone through the same mental exercise, or have other causes militated against their doing so? I think we may fearlessly reply that women altogether have had but a moiety of the education supplied to the other sex, and that from the one extreme, where she is valued for her domestic services, to the other, where she is admired for her beauty and accomplishments, there has been no sufficient cause or opportunity for real development of mind. The common practice of secluding the women, owing to the jealousy or precautionary measures of the men in preventing an intercourse with the outside world, produces a paucity of ideas and feebleness of intellect. We need not only look for this in the harem of the east, nor at the police-like supervision of the Chinese, but even in our own country we have from the earliest time, either rightly or wrongly, drawn a hard and fast line between what shall be considered as subjects and pursuits for men, and what shall be considered as such for women. That this seclusion can but have proved detrimental to cranial capacity, we may judge by analogy from the result of Mr. Darwin's experiments and researches with rabbits. He has shown that the brain of the domestic rabbit is considerably reduced in bulk in comparison with that of the wild rabbit or hare; and he

* "African Sketch Book," vol. ii, p. 522.

† "Anthropological Review," vol. vi, p. 355.

remarks that when we remember that rabbits, from having been domesticated and closely confined during many generations, cannot have exerted their intellect, instincts, senses, and voluntary movements, either in escaping from various dangers or in searching for food, we may conclude that their brains will have been feebly exercised, and consequently have suffered in development. We thus see that the most important and complicated organ in the whole organisation is subject to the law of decrease in size from disuse.* The only one common field on which both sexes seem to have met is that of religion. At all times the church has been solicitous for the support of a female laity, who have, from their little idea of the knowledge of the age and their seclusion from most intellectual topics, shown a fondness for dogma and an absence of scepticism. We frequently hear of the so called innate religious ideas of women, which may be merely the result of the clergy having for a length of time alone solicited their services in another field to the duties of housekeeping or the mysteries of fashion. Women with any activity of disposition and absence of employment have often to seek in church or other religious work a relief from the *ennui* of inanity, and not only form their estimate of spiritual but also of temporal matters from the clergy. The result has been little in intellectual development. The cares of the family and home might be generally accepted as involving much about the usual amount of mental anxiety and exercise in the midst of a more primitive as well as in a highly organised society, and hence, if that has been the only horizon of female mental activity in both those social conditions, we should expect to find what the facts show us, that in primitive peoples the brain of woman approximates more closely to that of man than it does in a higher state of civilisation, because man has comparatively alone pursued those avocations and undergone that educational discipline that tends to produce a highly developed cranial capacity. By educational discipline I do not allude to the mere teaching of schools or of books, but to those habits of inductive analysis which are incidental and necessary to maintain a position in the mental struggle for existence in a society which is ever approaching a higher evolution both in the conception of natural conditions and in the power to make use of the same. It has been pointed out again and again how the mental acquirements of woman have proved of no pecuniary value, and how a strong mindedness has been considered as converse to attractive. It is also worthy of remark how the most intellectual women consort with men for mental companionship rather than with their own sex.

* "Variation of Animals and Plants under domestication," vol. i. p. 139.

Some confusion of idea may arise from taking the most highly intellectual and educated men as the standard to which we are considering it possible for women to arrive. This must be quite negatived, as though we find the brains of illustrious men as Cuvier, Abercrombie, and many others, attaining great weights, the masculine average is far below, and it is only to this degree we are discussing the possibility of female elevation. It will be equally foreign to the argument to adduce the names of very eminent women, or the fact of Professor Wagner meeting with the brain of a woman which was absolutely heavier than that of Cuvier. We are dealing with the aggregate and not comparing the choicest units.

It cannot, I think, however, be denied that there are physiological conditions which must for ever tend against the possibility of women as a rule arriving at an equal, much less acquiring a superior, position to men in the mental struggle. We have seen that not only in the form of the skull, but also in the weight of the brain, women hold an intermediate position between the child and the man, and we must discriminate how much of this difference is structural, and how much developmental, or the result of arrested development. Now, it cannot be derogatory to the true estimation of women to describe as her principal mission the reproduction of the race. This is both the Alpha and the Omega of the inquiry. And the cost of this reproduction is most severe. For, as pointed out by Herbert Spencer, whereas in man individual evolution continues until the physiological cost of self-maintenance very nearly balances what nutrition supplies, in woman an arrest of individual development takes place while there is yet a considerable margin of nutrition, otherwise there could be no offspring. This rather earlier cessation of individual evolution, thus necessitated, showing itself in a rather smaller growth of the nervo-muscular system, so that both the limbs which act and the brain which makes them act are somewhat less.* Mr. Spencer also inclines to the belief that where exceptional fertility exists there is sluggishness of mind, and that where there has been during education excessive expenditure in mental action there frequently follows a complete or partial infertility.† Again, the nervous system of women is subject to unusual excitement and agitation by sexual causes, as the hysteric affections of puberty, the nervous susceptibility which occurs during every menstrual period, the nervous affections of breeding and the nervous susceptibilities of lying-in women.‡ These causes must of course militate to a great extent

* "Study of Sociology."

† "Principles of Biology," vol. ii, p. 502.

‡ Gooch, New Sydenham Society's Publications, vol. ii.

against prolonged and continuous mental labour, but certainly are not sufficient to prevent a far higher mental training than at present, and thus necessarily a higher mental development and cranial capacity. Among other differences of an allied nature between the sexes may be noticed that of temperature, which closely follows the rule of cranial form and weight of brain. From a very interesting memoir which has lately appeared from the pen of Dr. J. Stockton Hough it appears that males have, as a rule, from the beginning to the end of life a higher temperature and a less frequent pulsation of the heart than females, varying, nevertheless, according to temperament, constitution, age, and condition of health; that they also appear to have a greater variation in temperature than females, thus agreeing with their variation in stature and many other peculiarities, from which he concludes that the woman approaches more to her condition as a child than the man does, and is consequently less highly developed.*

It seems that we can therefore greatly account for the mental divergence between men and women. Firstly, by sexual selection, difference of education, and force of custom; and secondly, by physiological conditions. The first we may accept as arbitrary, tentative, and temporary, and therefore capable of amelioration and improvement. The second we must look upon as final and unalterable. The first gives a hope of sure and certain progress to be effected by a higher evolution of society; the second shows only a physiological check to excessive mental expenditure. This check is also in a different manner sustained by man, though perhaps less suddenly than by woman, and there can be little doubt that as the race progresses the cranial capacity of the sexes, though not becoming identical, which is a physiological impossibility, will yet become much less distinct and divergent, which is a moral certainty if based on moral conclusions.

DISCUSSION.

Mr. G. HARRIS said that thanks were due to Mr. Distant for his interesting paper, the subject of which was particularly opportune, as the representative of the borough in which they were assembled had already given notice of a measure for conferring upon women Parliamentary suffrage. He (Mr. Harris) regretted, therefore, that this special branch of the topic had not been touched upon by the paper, so far as regarded the qualifications of women for exercising the functions of legislation. One fallacy appeared to pervade the arguments generally availed of in relation to this subject, which was that the education of women was in most cases very inferior to that of men,

* "Philadelphia Medical Times," Nov. 8th, 1873.

and it was attempted to be concluded that this was the main cause of the intellectual difference between them. He (Mr. Harris) doubted the inferiority asserted. Women had as good an elementary education as men had, while they had much greater opportunities of following it up from their ample leisure. It had been urged, however, that what leisure they had was peculiarly liable to be interfered with by duties connected with fecundity and different household avocations. Only those, however, of the women, who comprised but a limited portion, who were wives, were absorbed by duties of the former class. He should like to hear from their president, who was peculiarly well qualified to express an opinion on the subject, what was the essential ascertained difference as regards structure, texture, and general material between the brains of males and those of females; whether attention had been directed to this subject in the case of the brains of animals as well as those of the human species. Differences in the mental constitution of the sexes there undoubtedly were, and in many respects; and to him (Mr. Harris) they appeared much greater than any variety. Both the education of males and of females could possibly account for it.

Mr. JEREMIAH, JUN., could not quite agree with Mr. Distant in his estimate of the mental capacity of women. He admits there are and have been exceptionally learned women, but the fact does not serve the requirements of his conclusion. Exceptions in the male or female sex are the product or resultants of truly natural laws, known or unknown, and one must, if truth is of value, examine into the causes that have made men and women exceptionally learned or clever, before any well studied conclusion can be arrived at. As some are believers in the notion that the brains of women are different from those of men, I would be glad if the president would give us his views upon the point, and tell us whether the brains of exceptionally clever men and women have been examined, and any differences in texture or weight been discovered. It seems as if the unknown quantity of the problem was to be sought as much in the nature of the brain as in the moral standard of cleverness, or learning, or general superiority formed by society.

Mr. Serjeant Cox said that the paper challenged these questions. 1st. Is it a fact that women are inferior to men in mental capacity? 2nd. If so, is it the result of education? 3rd. Or by force of a natural law? The fact could not be disputed. Women excel us in some intellectual qualities, as perceptive power and, perhaps, memory, and in imagination. But they are inferior to men in respect of the reasoning faculties. The ablest woman in almost every intellectual pursuit has been found inferior to the ablest man. To what is this difference due? Having less bodily strength than man, and by her maternal duties incapacitated from cultivating the same pursuits, her mental structure has become moulded to her position. If originally she had been man's equal in mind, during long ages of subsequent depression, her structure would have become moulded to the conditions of her existence. But the important question is, if other treatment could make her

other than she is, and that raises the third question. Is woman's mental structure the result of what he must term a natural law? for, if so, no change of conditions could bring about equality of the sexes. He was inclined to the conclusion that it was the result of natural law, because it was universal throughout the human race, and still more because it was a good and not an evil. Woman excelled in the faculties most useful to her, as man excels in the faculties most required by him. But not the less might the intellectual position of woman be improved. For instance, if otherwise qualified for the franchise, she ought not to be excluded simply because of her sex. She is, at least, as well qualified intellectually as numbers of the men to whom to vote is given. There are many employments for which her special intellectual faculties peculiarly adapt her, and to which more easy access ought to be permitted to her.

Mr. DISTANT said, in consequence of the late hour I will endeavour to reply as briefly as possible. I have not alluded to the political enfranchisement of women, considering that to scarcely fall within the province of a scientific discussion, but as a question to be decided elsewhere. A gentleman has asked me why ladies have not made more use of their large amount of leisure for educational purposes. I can only reply that leisure to acquire in this case is not combined with opportunity for the useful exercise of the same, and that while learning is not sought after in women, and it often only brings the recommendation of "blue stocking," we cannot be surprised either at the little mental use made of spare time, or the little knowledge possessed. I must again reiterate that I have not argued in my paper as to the possibility or probability of the cranial capacity of both sexes becoming identical, but most strongly believe that it will and ought to become much less distinct and divergent. I have also only dealt with aggregates and not with choice examples of either sex, and by the education of the race I have not alluded alone to schools and books but to the healthy exercise of the mind by observation and induction, to which liberty is essential to the first and knowledge to the second.

Mr. HYDE CLARKE and the PRESIDENT also joined in the discussion, and the meeting separated.

APRIL 14TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

THE minutes of the previous ordinary meeting were read and confirmed.

WM. STOATE, Esq., of Wembden, Bridgewater, was elected a member.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Tome viii, fasc. 4.

From the AUTHOR.—Sopra una rara anomalia dell'osso malare; Alcune Osservazioni sui Crani Siciliani del Museo Modenese e sull'Etnografia della Sicilia; La Neogenesi lettera di Enrico Morselli al Prof. Mantegazza. By Enrico Morselli.

From the INSTITUTE.—The Canadian Journal. Vol. xiv, No. 1.

From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From LOGAN D. H. RUSSELL, Esq.—One Grass Hat, as worn by Mandingo chiefs.

The Director read a description, by Mr. H. Howorth, of an Ashantee Fetish Curse, and exhibited the document.

MR. JOHN BRENT, F.S.A., *exhibited a small, but selected COLLECTION of INCISED FLINTS.*

THEY chiefly related to the Palæolithic Period, but were confined to the localities of the gravel beds of Canterbury, and of the coasts between Herne Bay and Reculver.

Mr. Brent's object was to show what he considered to be a distinctive difference between the worked Flints of Reculver and those of Canterbury; the former exhibiting, generally, a much higher finish and artistic character, whilst the latter, such as had come under his own experience, were of ruder workmanship, and from the circumstances under which they were found, possessed characteristics which seem to prove them to be of a remoter antiquity. He offered his reasons for this conclusion by a description of the geology of the two districts, and the peculiar conformation of the strata of each.

At Canterbury the incised flints were found at a depth of from 14 to 16 feet, in gravel drift and sand, with ossuary remains of the *Elephas Primigenius*. The flints rested immediately upon the chalk, and were even sometimes found in hollows filled with drift deposited in the chalk itself, the sur-

face of which was most uneven, often cropping up within a few feet of the upper soil, in small irregular masses, whilst at a short distance only, it lay far below the deepest excavations; the sand, gravel, and clay layers indicating often by their whirled and twisted appearance the forces of vast bodies of water which had acted on them. Near Reculver, the geological deposits are:—Firstly, Thanet sand extending to a considerable depth; above this lies the London clay, then a mixed deposit of sandy and clayey soil, and then, a thin red even line of gravel drift, close to the surface. In this line were deposited the Palæolithic Flints, which are precipitated to the beach by the combined influences of rain and frost, which yearly cause a great downfall of the facing of the cliffs.

The high tides and rough seas below wash away the clay, sand, and gravel, and thus leave here and there amongst beach and sand, the Flint implements of a remote period.

On the coasts by Herne Bay and Bishopstone no chalk is visible, but it comes to the surface in an even line two or three miles inland, and composes almost entirely the Isle of Thanet.

At Bishopstone there is no appearance of any violent catastrophe forming the gravel beds; but at Canterbury the whole of the tertiary formation seems to have been swept away.

The green-coated flints which often mark the junction of the chalk with the Thanet beds, and to which probably they belong, are wanting on the surface of the Canterbury chalk. Mr. Brent pointed out the elegance and finish of some of the Reculver Flints; one especially, which appeared to be executed by an artist in his way. The ripple-like flakings on a small black implement were shown, in which the furrows seemed executed with almost a mathematical precision, together with a fine little specimen (straw-coloured) of the smoothly-incised arrow-head type, with one cusp, a variety very rare, and probably the first that has been found in England south of Derbyshire. Both these objects came from the coast between Herne Bay and Reculver, and similar implements are described in Mr. John Evans' "*Ancient Stone Implements*," at pages 350 and 351.

DISCUSSION.

Mr. A. W. FRANKS observed that with regard to the interesting series of flint implements from Reculver, it must be borne in mind that nearly all the specimens have been found on the sea shore, being derived from the cliffs that are wasting away, and that their age must therefore be judged of by comparison with other specimens. Thus he agreed with Mr. Brent in considering the arrow-head with one large barb at the side (a very rare specimen to have been found so far south) as Neolithic, to which period he should also be disposed to refer a

small delicately-chipped specimen, somewhat slug-shaped. Of the Canterbury specimens the greater number were of a drift type; but among them was one which, though stated to have been found in the gravel, was not of that type, and resembled the implements found at Spiennes, in Belgium. On examining the specimen, the statement of the labourer who found it—viz., that it came from the gravel—proved incorrect, as on it there were indubitable marks of having lain for some time on the surface, and frequently been passed over by the ploughshare.

Mr. TIDDEMAN suggested that from a geological point of view there was no need to regard the two deposits at Canterbury and Reculver as of different ages and accumulated under different conditions, in spite of the signs of disturbance which the author stated to exist at the former place in contrast to the quiet aspect of the beds at the latter. The folding of the superficial deposits, and the occurrence of the implements in hollows on the surface of the chalk at Canterbury, might more naturally be attributed to the action of rain-water upon that soluble material. At Reculver, on the other hand, as Mr. Brent had shown, the implement-bearing gravels lay upon tertiary beds, which were not liable to that action. The beds at Canterbury demanded, so far as the facts brought before the Institute would enable one to judge, no more "violent torrential action" than that of "the gentle rain."

The Director read a series of papers for the author, of which the following abstracts are given:

NON-HISTORIC STONE RELICS *of the MEDITERRANEAN*. By Capt. S. P. OLIVER, Royal Artillery, F.S.A., F.R.G.S., Corresponding Member Anthropological Institute, etc.

PART I.—*The "TORRE DEI GIGANTI" of MALTA*. [With Plate vi].

THE author described four out of the five surviving groups of megalithic structures which alone remain in Malta and Gozo—viz.; 1, Corradino Hill; 2, Hagiar Khem; 3, Mnajdra; 4, Gozo; 5, Marsa Sirocco (was not visited). The least important are those on the Corradino Hill, which at present much resemble the remains of so-called hut circles both British and Pictish. The second and third groups, both overlooking the sea near the village of Krendi, are in a far better state of preservation. They have been described by Houel, "Voyage Pittoresque en Sicile et Malta," 1787; by De la Marmora, "Nouvelles Annales de l'Institut Archæologique," 1836; by Lieut. Foulis, 59th Regiment, "Malta Penny Almanack," by W. H. Bartlett, "Gleanings, Pictorial and Antiquarian, on the Overland Route," 1851; also in "Art Journal," 1853; "Archæologia," vols. xxii and xxix; in "International Prehistoric Society's Transactions," 1868; in Waring's "Monuments and Ornaments of Remote

Ages ;" and in Fergusson's "Rude Stone Monuments;" lastly in "Anthropologia," vol. i.

These antique Maltese constructions consist mainly of Cyclopean unhewn masses of coral limestone, containing aggregations of chambers (generally in sets or pairs), more or less apsidal or ovoid in form, and internally faced with hewn slabs of sandstone, whose surface is mostly ornamented with archaic sculpturing, unique of its kind. The chambers are connected by narrow passages under trilithons, or through square doorways cut out of solid blocks. The sets of chambers, more or less complicated, have apparently been roofed by horizontally-constructed vaulting, and the whole originally formed a domical-chambered cairn, more or less pyramidal or conical.

Some photographs taken by the Royal Engineer Department were exhibited, which graphically indicate the Cyclopean dimensions of the exterior podia, rendered necessary to support and resist the outward thrust of the domes. A recent writer considers that the chambers were ever hypæthral, contesting that otherwise the ruins of them would exist, forgetting that an immense amount of rubbish and material has been cleared away ; for in 1787 only the outside walls of the Gozo monument were known, and the other groups, some of which have disappeared entirely, looked like "Druidical circles" until excavated. It is not impossible that some of the stone-circles in the British isles may have formed the skeletons of some such constructions.

The numerous cells, recesses and *loculi*, shelves, altars, pedestals, etc., were noticed, and their destination discussed. One table stone, supported by horizontal grooves cut in the side slabs of the chamber, in addition to its pedestal, was compared to a somewhat similar arrangement in a Pelasgic (?) megalithic tomb near Cartona, figured in Dodwell's "Pelasgic Remains," Plate 127.

The author supposed the smaller niches to have been intended to hold the small idols which were found, and which, from their peculiar shaped limbs (their heads do not exist), were probably of Oriental affinity, as well as the small pyramidal cones of stone, not dissimilar to those represented in the hands of the Egyptian priests kneeling before the sacred serpent, and analogous to the supposed sacred symbols to be mentioned hereafter in connection with the Sardinian nurraghs. So also the peculiar cup-pitting, which has been extensively used to ornament the entire interior of these structures, was pointed out as having a near affinity to the ornamentation of Hellenic polygonal constructions at Platea in Boeotia and elsewhere in Greece. Some of the smaller orifices, drilled through the side slabs which divide the chambers, may have been used for passing small ar-

ticles by hand. Some of these odd recesses have been left unfinished, whilst other larger apertures may have been used for certain rites, and the writer before mentioned has suggested that oracular responses were uttered through them, and likens them to the Roman confessional.

Among the Zakha Khey1 Afrides, who live by plunder in the vicinity of the Khyber Pass, a curious rite prevails. Each male child is consecrated to robbery, burglary, etc., by being passed through a hole in a wall backwards and forwards whilst the following words are uttered: "Ghal Shah," "Ghal Shah"—"Be a thief," "Be a thief."—(The "Pioneer.") These drilled slabs in the more dilapidated Maltese structures exactly represent the Cornish Mên-an-tol through which children are passed to the present day to avert spinal and rheumatic diseases, and have a certain analogy to the tolmen entrances of the dolmens at Plas Newydd, Kerlescant, etc. The occupiers of the Maltese buildings were particular in mending these holes when broken, and one in Mnaidra whose side is damaged has been neatly and carefully repaired by a small stone fitted in where required. See fig. 182, in Fergusson.

Attention was also drawn to the numerous stone basins in the floors of the chambers, as well as to a curious funnel-shaped concavity in the platform of one of the apses at Gozo.

One of the square doorways at Mnaidra has been so carved as to resemble a trilitheon, although cut out of a solid block, like the doorways at Tir Huanaco and elsewhere in Peru. Similar blocks of stone, with a passage cut right through them, were remarked by Professor Piazz1 Smith in the first ascending passage of the Great Pyramid at regular intervals. Some tradition of such entrances may have led to the construction of the so-called Tolmen entrances to sepulchres found in Brittany.

Everywhere, but especially in connection with the fastenings of the doors and recesses, are observed many artfully-contrived undercut holes and handles, the holes being often connected by a channel either vertical or horizontal, some worn through. These may be compared with the worn orifices still existent in the sides of the gates of the Cyclopean walls at Tiryns and Mykenæ.

At Gozo, in the entrance gates, we find deep holes on one side of considerable size, with connecting channels, and corresponding to them shallow holes or depressions not connected, evidently for reception of a barrier of stout timber.

A few observations on the origin of the names Hagiar Khem and Mnaidra followed.

It was shown by the author that there was reason for supposing these remains to have been constructed by the colonists

who first reached Malta, perhaps members of one of those successive migrations of the Thessalians, Bœotians, Dorians, Minyans, etc. As Greece is the head-quarters of Cyclopean constructions, it is there that we must look for the source and home of these dome-builders.

PART II.—OBSERVATIONS *on some TUMULI near SMYRNA, and on some CELTS of GREECE, the ÆGEAN, and ASIA MINOR.*
[With Plate vii.]

OPPOSITE Smyrna, upon Mount Sipylus, is a singular group of prehistoric monuments, known as the tombs of Tantalais. The principal of these tumuli occupies a solitary position on the summit of a spur from the mountain side, at some elevation above the water's edge. This building consists of the ruins of a circular-retaining wall about five feet in height, which batters in slightly, and is composed of polygonal masonry. The tumulus has been more than partially demolished by the sinking of a crater in the centre down to the vaulted chamber, and the rubble has been thrown out beyond the revetment, which is nowhere perfect.

The well-built vault, partially broken in, gives a most interesting specimen of horizontal vaulting. The top course of masonry has disappeared, but several of the next course, and still more of the next remain; below this the vault is perfect. The stones composing the vault are well hewn, and fitted with the corbelling cut away evenly. The arch does not come exactly to a point, but a slight space left, forming a groove, a feature common to some of the Etruscan horizontal arches, notably the Galassi Regulini tomb.

Several slabs of squared and dressed stones were lying scattered about, one of which was noticeable from the dove-tailing cut in one of its edges, which may be taken as evidence of contemporaneity with the dove-tailed stonework of King Alyattes' tomb at Sardis, of which Spiegelthal gives an illustration with a fragment of the dove-tails fitting together. In the Tantalais example the end dove-tail has been broken, and repaired by cutting two smaller dove-tails further back from the fracture.

Lower down from the tomb, the rock has been artificially scarped, perhaps for quarrying. At some distance and lower down are three tumuli, one below the other on a ridge: they are all domical, and supported by retaining walls. These podia are, in two instances, built in horizontal courses: and in the other in reticulated masonry. The centre one is supported on its lower side by a platform of steps. At the foot of the lowest was one of the ornamental finials which formerly surmounted the monument, with a square base and rounded top.

After alluding to the site of an entrenched camp below the mountain, a few remarks were made on the Collections of Celts in possession of M. von Gonzenbach, of Smyrna, and Mr. Finlay, of Athens, illustrated with drawings of the most characteristic.

PART III.—DOLMEN MOUNDS *on the RIVER ALBEGNA.*

TWENTY miles from the mouth of the River Albegna and on its right bank is a group of rude, ruined tumuli, which Dennis first described as approaching in construction the British cromlechs.

The level plateau of lava on which they stand is about 200 feet above the river-bed. The mounds are scattered in groups and lines of eight or more together—some conspicuous and others all but obliterated. They consist of rectangular chambers of upright slabs of stone, supporting flat cap-stones, the largest of which is not more than 12 feet in length. In some instances the cap-stones are supported by smaller masses of rock roughly built up. The material is lava greatly disintegrated. They have apparently, without exception, been covered with cairns at least as high as their capstones, which may, or may not, have been hidden. The exterior outline of these mounds is naturally indefinite, but appears to have had a rectangular trace. Mr. Dennis suggests a pent-house arrangement to have been intended in some instances; but I failed to detect evidence of such intention. The narrow entrances are characteristic of the northern dolmens. I had previously visited, for purposes of comparison, the long array of sepulchres in the cliffs of the Banditaccia at Caere; but it was in the well-known Regulini Galassi tomb that I found the best specimen of the highly developed dolmen-mound, and its construction almost identical with that of the vaults in the Lydian mounds.

Dennis says that the existence of the large mound, which originally covered it, is a mere matter of history, as all trace of it had vanished; but, to my eye, the circular area occupied by the base of the tumulus was still discernible, and the excavated tomb seems to occupy but a side portion of what was once an enormous tumulus; so that I should not be surprised if a twin sepulchre yet existed intact at a short distance from, and parallel to, the celebrated tombs, to the right of the present entrance.

Considering the vast richness of the interior find, never surpassed in the annals of archæological grave-digging, further search in this direction would be well worth the trouble. It seems to me that the low bank, which Dennis speaks of as being in the middle of the field, is, in reality, the remains of the base of the podium of the original tumulus. The tumuli at Vulci, which I also visited, I found much disfigured. Only one of the

interior steles of the larger Cocumella tumulus is now visible, and none of the podium. It seems difficult to believe that this tumulus, unless faced like a pyramid, could have ever risen to the height of 120 feet above the plain. It is possible that a sequence of continuity may somewhere be detected between the barbarous dolmen builder and the more civilised constructor of the chambered tumulus and horizontal vault. There is little doubt that the more archaic tombs were reappropriated by subsequent peoples.

PART IV.—THE SARDINIAN NURAGGHS. [With Plate viii.]

MY personal experience of the famous nuragghi extends only to those groups on the north-west portion of the island of Sardinia, viz., those on the *Altipiano della Campeda* to the north, and on the *planu* of Borore to the south of Macomer, and those on the *Campo Giavesu*, in the vicinity of the extinct volcano of Keremule, near the village of Torralba.

The nuragghi are not unlike the martello towers of England in size and outward resemblance. Upon a platform or substructure there rises the characteristic tower of well-fitted masonry, with hollow or double walls, within which are spiral ramps or steps to the different stories formed by domed chambers within. The doorways are small, and generally on the first floor, and a small aperture sometimes gives access to the lowest chamber from the exterior. The substructure is variable, but also contains smaller domed cells connected with flues, which can hardly be called passages.

In reference to the great numbers of these nuragghi, upon which he bases his argument against their being fortifications, Mr. Fergusson states that no imaginable state of society could require three thousand castles, and yet no fortified cities; but Colonel Lane Fox tells us of the existence of upwards of five thousand raths (decidedly fortifications) in the province of Munster alone. In fact such a state of society is actually exhibited in the present day by the Wahidee tribe, among the Koreish Arabs, in East Yemen. This tribe consists of peaceful tillers of the soil, who fight only when necessary to repel marauders, and who inhabit lofty detached castle-like houses, of a form and size which enable them to resist successfully any attack. So also the Huancas, in South America, lived in villages fortified with stone towers. Similarly among the Mainotes, in the southern portion of the Peloponnese (the descendants, it is believed, of the Eleuthero-Laconians), and amongst whom a sanguinary vendetta similar to that of the Corsicans and Sardinians exists, an analogous system of isolated towers was not long since to be found.

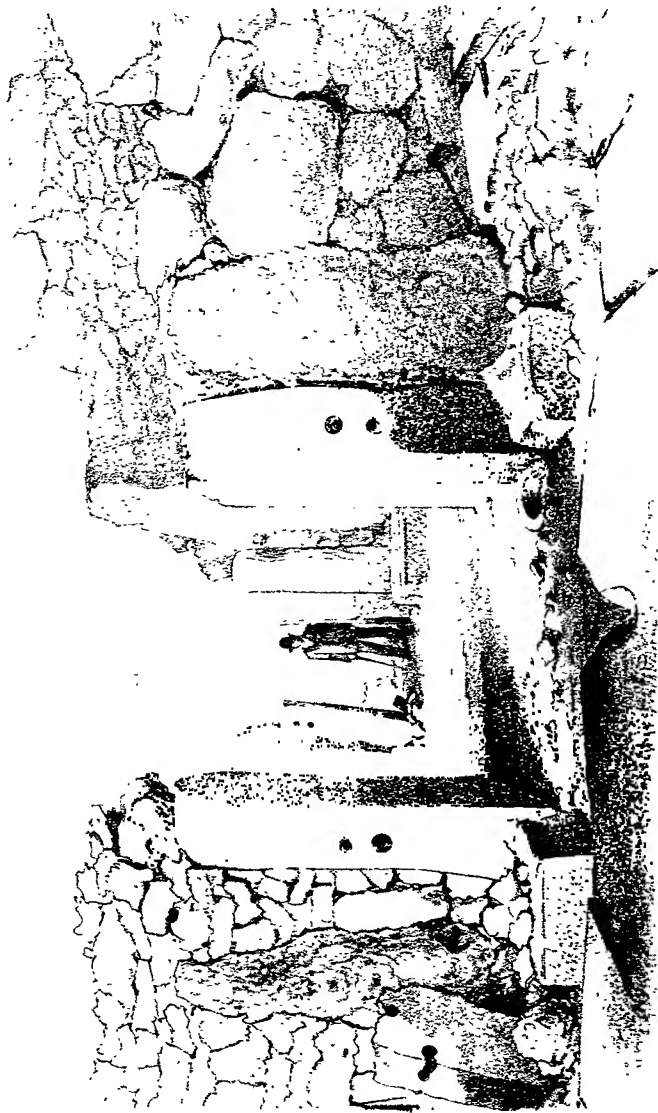
"The whole country was a country of towers perched, for the most part, on rocky heights," says the writer in the "*Allgemeine Zeitung*," speaking of Maina.

Mr. Freshfield mentions three villages in the Caucasus, as possessing not less than sixty stone-built towers between them, irregularly grouped. North of the great wall in China, we read "Almost every knoll in the rolling landscape is crowned with a cone-shaped tower, which were designed to serve as towers of refuge for travellers." Or take our own country, for instance, on the banks of the river Fal, within the space of not much more than one square mile, are about five fortified sites, and indeed throughout Cornwall are traces of numerous cliff-castles and other fortifications. The doubled-walled Pictish towers of the Shetland islands and Scotland may also be cited as similar examples.

NURAGGI SARDI.

AUTHORS.			ORIGIN.			DESTINATION.		
1.	Angius	...	Phœnician	...	...	Fire-worship.		
2.	Arri	...	Phœnician	...	...	Fire-worship, Baal.		
3.	Arnim	...	Phœnician	...	...	Worship and Sepulture.		
4.	De la Marmora	...	Phœnician	...	...	Worship and Sepulture.		
5.	De Rougement	...	Prehistoric, Libyan	...	...	?
6.	De Malzan	...	Native hereditary chiefs	...	...	Castles.		
7.	Domenech	...	?	...	...	Public religious edifices.		
8.	Fara	...	Iberian	...	...	?
9.	Fergusson	...	Oriental	...	...	Towers of silence for exposure of dead bodies.		
10.	Inghirami	...	Tyrrhenian	...	...	Sepulture.		
11.	Lombard	...	Canaanitish Sons of Anak	...	...	Altar-temples.		
12.	Madao	...	Antediluvian	...	...	Sepulture.		
13.	Manno	...	Oriental	...	...	Sepulture.		
14.	Micali	...	Phœnician & Carthaginian	...	...	Sepulture.		
15.	Mimaut	...	Iberian	...	...	Sepulture.		
16.	Münter	...	Phœnician	...	...	Fire-worship.		
17.	Petit Radel	...	Thespian, Tyrrhian, and Pelasgic	...	...	Sepulture.		
18.	Peyron	...	Primitive Nomads	...	...	Sepulture.		
19.	Smyth	...	Trojan	...	...	Mausolea and Asyla.		
20.	Spano	...	Troglodytic autocthonous	...	...	Dwellings.		
21.	Stephanini	...	?	...	...	Trophies of victory.		
22.	Tyndale	...	Canaanitish	...	...	Altar-temples.		
23.	Vidal	...	?	...	...	Giants' houses.		

In spite of the long array of authors whose opinions are adverse, I think that the common sense conclusion is, that these nuragghi were granaries in time of peace, and fortresses in time of war; in fact defensible depôts, to which the inhabitants of the neighbouring huts could fly in case of sudden attack; and, as in those non-historic times, in all probability, the agricultural implement and warlike weapon were interchangeable, so when it was not only necessary to store the corn, but also to defend



GIANTS TOWER, LOOKING EAST FROM INTERIOR OF SOUTHERN SET OF CHAMBERS



TUMULUS OF TANTALAI'S AND GULF OF SMYRNA



DOLMEN MOUNDS. ON R^T BANK OF THE RIVER ALBEGNA N^o SATURNIA.



HURRAGH OF ST ANTINE, AND OES IN THE DISTANCE

T. G. H. C. 21. London, E.C.

it, the granary was synonymous with the castle. That the nuragghi were inhabited seems undoubted, from the worn, polished entrances showing constant use, and the prevalence of *debris* of pottery, etc., in and about the buildings. All metal has long since disappeared from the ruins, which have been well ransacked, although in a few instances some small ornamental bronze figures have been found near them. As to the age of the buildings, their peculiar original pattern of structure carries us back into the gloom of long past ages; but at the same time their use, construction, nay defence, may not improbably have been continued until a comparatively recent date. This is the only way to account for the wonderfully good state of preservation of the masonry, which can hardly have existed for three thousand years in the situations, exposed to alternate heat and cold, where they are found, without exhibiting greater signs of weathering and decay; for the climate is not that of Egypt, nor the material that of the pyramids; in general, the lava blocks, of which the masonry is often composed, are very liable to disintegration.

The absence of any legendary lore in connection with these towers can be accounted for, when we consider that the present Sardes can hardly be looked upon as the lineal descendants of the hardy nuragghi-builders, who were probably all but exterminated by foreign invaders. The islanders received neither mercy nor quarter at the hands of the Carthaginians, and subsequently the few surviving tribes fared no better from the Romans; for nearly two centuries preceding the Christian era, at least a thousand Sardes per annum appear to have been either slain or carried off captives by the Roman soldiery.

The Rev. Isaac Taylor informs me that the name "nuraggh" is doubtless Turanian, like that of Sardinia itself. It may come from two Turanian roots meaning "lofty dwelling" or "high tower," and in this case would bear out my view of the intention of the structure.

Dr. Charnock derives the vocables, *uri*, *ir*, from a Phœnician word signifying city, town, etc.; the same with the Hebrew *iy*, a city, camp, watch-tower.

PART V.—*The SEPULTURE DE IS GIGANTES.*

IN association with the nuragghi are found remains of a quasi-megalithic character, whose purpose is, beyond all dispute, sepulchral; so that their presence affords reason for doubting that the nuragghi could have been destined for interment or exposure of dead bodies.

The author examined five of these monuments at Tamuli, St. Baingu, Imberti, and La Figa, all near Macomer, and Borore. Their characteristics are as follows, viz.; a long, low, oblong, barrow, enclosing an elongated kistvaen from 20 to 30 feet long, and 4 to 5 feet wide, about 3 feet deep, and covered with flat stones, and forming small *allées couvertes*. At the extremities of the kist, whose corners are rounded, are larger hewn slabs of stone, perhaps corresponding with the two menhirs found in connection with the long tumuli of Brittany. Some of these stones are curiously recessed;* and elevations and sections to scale are exhibited to the meeting.

In connection with the nuragghi di Tamuli (Lycian Termilæ ?) are twin barrows, to the west of which is a line of six conical stone pillars, one of which is prostrate. These stone pedestals have elliptical bases and sharpened summits; the three to the north are plain, but the three to the south have prominent projections evidently intended for *mammæ*. They recall to mind the stone cones found in the Maltese remains previously described, and remind us also of the pyramidal honey cakes marked with the sacred omphalos which were conspicuous in the Bacchic orgies, as well as the pyramidal cones marked with spiral bosses in connection with the ophiolatrea of the ancients.

The miniature arch or entrance to the sepulchre, almost underground and intended to be covered at the foot of the head-stone, is remarkable.

A circular or semi-circular enclosure is said to exist in some instances in front of this species of tomb, but was not seen by the author in any instance. Where it exists it would be analogous to the horse-shoe platforms in front of the Chinese tombs where offerings are placed.

The sepulture is evidently coeval with the nuragghi, and bears the same relation to it that the bilithic tomb bears to the towers of the Balearic isles.

Near Baiginzones there was a rude stone monument which greatly resembled a free-standing dolmen. Its capstone measured 10 feet by 6 feet, and was supported on six upright slabs. It is entirely denuded of its cairn. The existence of rock-hewn tombs in the limestone cliffs between Torralbas and Giavesu was noticed, and a resemblance traced between them and the *machays* of the Yucas.

DISCUSSION.

Dr. LEITH ADAMS observed that, from a lengthened sojourn in Malta,

* A drawing of the "Gigantinu" of St. Baingu was published in the "Illustrated London News" for July 4, 1874, from a sketch by the author. The figures have, however, been too much reduced in size, which slightly exaggerate the size of the slab.

he was familiar with the pre-historic remains in that island and Gozo. It is a mistake lithologically to state that the ruins are composed of the coral limestone, the material being a friable calcareous sandstone. He agreed with the author of the paper with reference to the very rude and primitive character of the upright blocks of stone and the pronounced bee-hiving of several chambers in Hhagiar Kim, Mnaidra, and Giant's Tower; but, although certain portions were covered in, there is no proof that this was the case uniformly. It had been suggested that they were mortuary temples, and no doubt the presence of shrines, altars, and the seven headless figures discovered in 1841 during the excavations in Hhagiar Kim fully bear out their religious character. The remarkable ovoid outlines of the fore-arms, arms, thighs, and legs of these seven figures, in conjunction with the oval outlines of the chambers of Hhagiar Kim, together with the circumstance that the latter amount apparently to the same number, has suggested an opinion advocated by a Maltese antiquary, Dr. C. Vassallo, that the idols represent the seven Cabeiri of the Phœnicians, who had dedicated Hhagiar Kim to those deities. Like the ruins themselves, these stone figures are unique as regards the Mediterranean Basin. The resonant stone mentioned by the author of the paper might refer to a horizontal block in a chamber in Hhagiar Kim, where a large slab is supported on uprights, and, when struck, gives out a sonorous noise, which guides are fond of illustrating. It must be allowed, however, that all large blocks perched on a few supports are likely to produce similar sounds. As regards the human skeleton found among the *detritus* within Hhagiar Kim on the occasion of the clearing out, although preserved in the Malta collection as a valuable relic, still there is reason to be sceptical as to its antiquity; at all events, its connection with the builders of the megalithic remains may be fairly questioned. The skull having been forwarded by the speaker to the President in 1863, he would perhaps say a few words on its characters, which are decidedly negroid, and seeing that the Knights of St. John were in the habit of retaining negroes in their service, it might just happen that the relic belonged to a casual burial of one of them. The round holes in the walls of Hhagiar Kim and Mnaidra are certainly suggestive of "oracular responses." Here, again, one must remember that no islands in the world have changed their rulers oftener than Malta and Gozo. Again, the rock-cut tombs in the neighbourhood of the Crendi ruins display considerable artistic skill, which ill accords with the rude monuments in their neighbourhood; in fact, the latter, like the pigmy fossil elephants found in the neighbouring rock fissures, are peculiar to these islands as far as yet known. Coins of Phœnician origin, and representing the Egyptian Jupiter, Osiris, have been discovered in the islands, but none of them date beyond the Ptolemies. In fine, it is the custom from the narrations of Diodorus Siculus and these coins, etc., to ascribe all the rude-built monuments of Malta to the Phœnicians, but before doing so it seems necessary to correlate them with similar unquestionable relics of this people elsewhere.

Mr. FRANKS remarked that he did not consider that there was any evidence to connect the megalithic remains at Malta with the Phœnicians. The art, such as it is, does not resemble what is known of them. The Phœnicians, from local and perhaps racial causes, never seem to have created an independent art of their own, but adapted that most in vogue at the time. Thus many of their earlier works, such as the bronzes and ivories from Assyria, were in a kind of bastard Egyptian style—a style which also characterises some of the coins found in Malta. Their later coins are in the Greek style, and classical designs may be found on the Phœnician remains from Carthage. All these characteristics are wanting in the megalithic remains from Malta and Gozo, where, moreover, no Phœnician inscriptions seem ever to have been found, though discovered in other parts of the island.

The President offered a few remarks, and the meeting adjourned.

APRIL 28TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The Minutes of the previous meeting were confirmed.

CHARLES COOMBE TENNANT, Esq., of Baliol College, Oxford, and 2, Richmond Terrace, Whitehall, was elected a member.

The following List of Presents was read, and the thanks of the meeting were voted for the same.

FOR THE LIBRARY.

From the AUTHOR.—Die Anthropologie als die Wissenschaft von dem körperlichen und geistigen Wesen des Menschen, 2 vols. By Prof. M. Perty.

From the EDITOR.—Revue Scientifique. Nos. 42 and 43, 1874.

From the SOCIETY.—Proceedings of the Royal Society. Vol. xxii, No. 151.

From the ANTHROPOLOGICAL SOCIETY OF SPAIN.—Revista de Antropologia. Vol. i, No. 3.

From ENRIQUE MEIGGS, Esq.—El departamento de Ancachs y sus Riquezas Minerales. By Professor Raimondi.

From the AUTHOR.—Die Schädelform der Turken. By Dr. A. Weisbach.

From Prof. A. ECKER.—Archiv für Anthropologie. Sechster Band, Viertes Vertel.

From the MUSEUM.—Erstes Bericht des Museum für Volkerkunde in Leipzig, 1873.

- From the ETHNOLOGICAL and ANTHROPOLOGICAL SOCIETY of ITALY.—
Archivio per l'Antropologia e la Etnologia. Vol. iv, No. 1.
From the AUTHOR.—The Ruins at Dunapar, on the Dunsin River,
Asam. By Major Godwin-Austen.
From the AUTHOR.—Pasigraphical Dictionary and Grammar, 3 copies,
English, French, and German. By Anton Bachmaier.
From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

- From LOGAN D. H. RUSSELL, Esq.—Sword as used by Mandingo
Chiefs; Grass Bag from Abomey, the capital of Dahomey; Grass
Cloth from Angola.

Dr. Anton Bachmaier read an address from the Anthropological Society of Munich, and briefly described the object of his Pasigraphical System of Language.

The author read the following paper:

STRICTURES *on* DARWINISM. PART III.—*On* GRADUAL VARIATION.

In a previous paper I have tried to show that Mr. Darwin's theory fails to meet the facts presented by the extinction of types, and that wherever we can test a case of extinction as occurring in nature, it has been by the operation of external causes, climatic and physical, and not by internal ones, and by the mutual struggle of individuals. I was told when I advanced this argument that I merely postponed the difficulty and put it another stage off, and that it would be better to criticise the origin, and not the extinction, of species. To this I now proceed. *In limine*, let me make the issue somewhat clearer than it has hitherto been. Mr. Darwin's disciples—not Mr. Darwin—argue as if the older naturalists knew nothing, and admitted nothing, or a very little, of the existence of variation; and that, until Mr. Darwin appeared, everybody argued as if types were absolutely rigid and inflexible. Everybody, surely, from the earliest days of observation, has admitted the existence of variation; has admitted that we cannot even find two individuals of a class identical in all respects; that, however limited and small our area of observations, differences and varieties exist; that nature never repeats the same model; this we are all agreed in.

The most fanatical adherent of Aristotle's opinions, or of those of Linnæus and the older naturalists, admit this, and to show that

things vary is not to show anything new, nor is it Darwinism. Again, Darwinism is not the theory of evolution. That all living and dead things, that matter and thought may be deduced from a homogeneous matrix or germ, which has varied and varied until the original ovum has given birth to a universe, and that we can by an elaborate analytic process trace back the genealogical lines of being to their fountain source, is a grand theory—which may be styled Spencerism, but not Darwinism. By Darwinism, I mean what it is the great honour of Mr. Darwin to have invented and propounded—namely, the theory that variation, where it occurs, is due to the internal, and not to external, causes—to a struggle for existence among individuals and not to external pressure. Formerly, it was held that a change of climate, a change of food, of outward surroundings, etc., sufficed in the long run to produce very great differences of type. The extent of variation admitted may be tested by the fact that mankind was almost universally admitted to be of one species, differenced in different localities by differing circumstances. Similar variations were admitted in animals, though within narrower limits, and, in fact, no one conversant with the most elementary facts of breeding domesticated animals could be long ignorant of this fact. Mr. Darwin's cause is not to restate an old fact, but to give it a new explanation, and whatever the ignorant and the fanatical may have to say to him, one who has learnt more than he can tell from him, will not cease to say, while he differs from his analysis of the facts, that he holds him to have advanced the cause of zoology more than all its other recent professors put together, and to say it, he trusts, with the respectful deference of a scholar for his master.

In this paper I shall not deal with that kind of variation which takes place *per saltum*, and which gives rise to suddenly-developed varieties, otherwise called "sports." This I shall consider in a future paper, but shall confine myself to gradual variation. It will be at once seen that the subject has two aspects, which materially differ from one another; in one of which I fancy all naturalists, Darwinians or otherwise, will agree, however they may differ as to the other. There is, first, variation in the individual; and, secondly, variation in the class. It is one thing to explain how an individual comes to change, it is another thing to explain how this change should be a qualifying characteristic of a whole class of individuals.

It is generally admitted by everybody that we are constantly changing, that from day to day we are not exactly the same persons, that our bodies change altogether every few years, and that our history from childhood to old age is a continuous change. As I have said, we also differ from everybody else.

Notwithstanding this, we do conform to a certain normal standard, under which we are comprehended when we say we belong to such and such a type.

Now I fancy that everybody is agreed that the causes of variation in the individual, putting aside those due to mere growth and decay, are of two kinds—those which are inherited, and those which are induced by different conditions of living. Beyond these two, I know of no causes, and in this I fancy Mr. Darwin and everyone else agrees. Where we criticise any individual variation, and try to discover what is due to inheritance and what to external influences, the problem becomes a difficult one, but it is not a problem in issue at present. It is enough, if it be granted, that the latter is a very patent cause of individual variation. If it be granted that where an animal or a plant is subjected to a change of conditions, a change of features ensues in it. The smooth-skinned animal or the animal with wiry hair acquires a thick coat of woolly hair if transplanted to a cold climate; the dark-coloured animal or bird acquires a white covering, such as the stoat and the ptarmigan acquire if transplanted to a very cold climate, and this in proportion to the cold; the annual flower of our latitudes becomes the biennial and perennial of the tropics; the bee of our latitude ceases to collect honey where flowers are to be found all the year round; the bear of cold regions ceases to hibernate where winter and summer hardly differ in temperature. The young, fair-skinned boy who goes out to India comes home, in thirty years, a bronzed and altered veteran; and so on. In this, I fancy, all will agree; but I shall be told that this in no way affects Mr. Darwin's position, which is not a denial that individuals are not altered by external influences, but a discussion of how the individual difference becomes the class difference, how the type in fact changes. Yet surely one question is a very important element in the solution of the other. If these individual changes, which are caused by external influences, were like the changes induced by inheritance, irregular, and in various directions; if we were unable, as we are in the case of inherited differences, to predict within certain limits the effects of such a change upon any organism, this might be said. But when we can do so; when we can predicate absolutely that certain changes will take place if the individual is transferred to certain localities and put under certain influences, and test our prediction by experiment, then it surely follows that the individual difference must become the class difference, if the class, no less than the individual, is subjected to the same outward influences. Mr. Darwin's argument, as I understand it, is, that when a change of condition occurs, one individual will develope an idiosyncrasy fitting it better than

mass of fat dwindles away. . . . Burnes says the Karakol breed, which produces a fine curled black and valuable fleece, when removed from its own canton near Bokhara to Persia, or to other quarters, loses its peculiar fleece. . . . In the West Indies, in the third generation, sheep lose their wool and look like goats with dirty floor-mats on their backs. (*Op. cit.* i, 99 & 100). Here, again, we have results which may be predicted, which will occur to any individual sheep exposed to the new conditions—that is, which affect the whole type together. In describing the peculiar breed of Porto Santo rabbits, which sprang from some Spanish rabbits set free there by the navigator J. Gonzales Zarco in 1418 or 1419, Mr. Darwin mentions how they differ from the European rabbit in colour, yet when one was imported into England “under the English climate this individual rabbit had recovered the proper colour of its fur in rather less than four years.” (*Op. cit.* i, 114). Here we have a remarkable case of variation under new climatic influences being neutralised by a migration to the old ones, proving as effectually as proof can that the effects were due to climate. Pallas remarks “that even in domestic animals, as horses and cows, the winter coat is of a lighter colour than the smoother covering which succeeds it in the spring. This difference is much more considerable in wild animals. I have shown instances of it in two kinds of antelope (saiga and gutturosa), in the musk animal (*moschus moschifer*), and in the equus hemionus. The Siberian roe, which is red in summer, becomes of a greyish white in winter; wolves and the deer kind, particularly the elk and the reindeer, become light in the winter; the sable (*M. zibellina*) and the martin (*M. martis*) are browner in summer than winter.” (“*Novæ Species Quadrupedum*,” quoted by Lawrence, “*Natural History of Man*,” 438.) These changes, which are intermittent in temperate climates, give rise to permanent changes of the same character where the whole year is wintry or summery. What is true of mammals is true also of birds. Mr. Darwin has described how the wild turkey was altered when transported to England, while “in India,” he says, “the climate has apparently wrought a still greater change in the turkey, for it is described by Mr. Blyth as being much degenerated in size, utterly incapable of rising on the wing, of a black colour, and with the long pendulous appendages over the beak enormously developed.” (*Op. cit.* i. 294.) The guinea fowl has altered a good deal when transferred to the West Indies—has altered in size, its legs have become black, whereas the legs of the aboriginal African bird are said to be grey. (*Id.* 294.) The great work which Messrs. Sharpe and Dresser are now publishing on European birds offers abundant materials for testing the same position. It can hardly be credited that a large number of the

species there described, which differ from other species merely in the constancy with which certain feathers are coloured, are anything but varieties dependent on different climatic conditions. Among other tribes, those of the spotted woodpeckers, the larks, the nuthatchers, etc., are notable. If similar tests of species were applied to pigeons or fowls, to domestic cattle or dogs, the term variety would lose its connotation. It can hardly be doubted that the red grouse is a variety of the willow grouse created by different conditions.

In regard to fish we have similar evidence. The invasion of a salt water basin by fresh water, and the gradual change of its saline character, is followed by a corresponding change in its inhabitants. So with the mollusca. Thus, in the Baltic, which has become gradually less salt, the shells have become greatly affected, and the change may be traced by comparing the fossil shells that are found on the old beaches high above the Swedish lakes with the similar shells still living in the sea. In the same manner the gradual desiccation and consequent increasing saltiness of the lakes of Central Asia, inclusive of the Caspian, has led to the distortion of the fish found in them. This cause, operating not on a single individual and its progeny, but on a whole class. The golden carp is an example of the great variation which ensues when a fish is surrounded by entirely different conditions. The number of its varieties and eccentric forms almost rival those of the pigeon. Plants are even more forcible examples than animals of what I am arguing for. Mr. Darwin describes the changes that took place in some maize experimented upon by Metzger. His commentary I cannot improve as an argument for my contention. He says: "These facts afford the most remarkable instance known to me of the direct and prompt action of climate on a plant. It might have been expected that the tallness of the stem, the period of vegetation, and the ripening of the seed would have been thus affected; but it is a surprising fact that the seeds should have undergone so rapid and great a change. As, however, flowers, with their product the seed, are formed by the metamorphosis of the stem and leaves, any modification in those latter organs would be apt to extend, through correlation, to the organs of fructification. (*Op. cit.* 322.) The amount of variation that can be artificially produced, and in a certain direction known beforehand, is extraordinary. Thus it is said that the Chinese have a method of changing the colour of the hair by diet. I find it on record that several instances have been produced where red and light-coloured hair has been made black. Thus l'Abbé Imbert came to Paris in 1823 to prepare for his mission to China. His hair was then of a glaring red. On his arrival he

was sent to a secret retreat, and subjected to a constitutional and internal treatment, which speedily turned to black all the hair on his body. M. l'Abbé Voisin told the lecturer that his hair, formerly grey, had been similarly changed by internal treatment. Other cases are quoted in the same account. The supposed operating cause of the change was an infusion of three kinds of plants, followed up by a peculiar regimen. There are certainly cases on record where the hair has changed colour under medical treatment. ("Year Book of Facts for 1841," p. 189.) These cases may be compared with others. Ravenstein, in his work on the Anur, says that the further east we go in Siberia, the darker the furs become. The squirrel changes the colour of its fur, and the Russians attribute it to a change of food. The black ones live chiefly on mushrooms, the brown ones and reddish ones on hazel nuts. Dr. Lawrence tells us that singing birds, chiefly of the lark and finch kinds, are known to become gradually black if they are fed on hemp-seed only. ("Natural History of Man," 439.) There are certain pigs which have become semiferal in the Southern States of America, whose bones have acquired a black colour, and this is said to be due to their food.

To these facts may be added others quoted by Mr. Darwin himself. "Mr. Wallace has also recorded a more wonderful fact. The Indians of South America have a curious art by which they change the colours of the feathers of many birds. They pluck out those from the part they wish to paint, and inoculate the fresh wound with the milky secretion from the skin of a small toad. The feathers grow of a brilliant yellow colour, and, on being plucked out, it is said, grow again of the same colour, without any fresh operation." (Darwin, *op. cit.* ii, 280.) "It is well known," he again says, "that caterpillars fed on different food sometimes either themselves acquire a different colour or produce moths different in colour." These cases and many like them have been accumulated by the indefatigable labours of Mr. Darwin, and what do they prove? Not only that altered food will alter an individual animal, but, inasmuch as the alteration may be predicted, it will alter the whole type together. Similar and more familiar instances are the dwarfing of animals and plants by particular diet. Gin is said to be so used by dog breeders in England. In Japan the spirit called saki is used for the same purpose. (See Fortune's "China and Japan," 98.) The process of dwarfing plants is described in the same work in very interesting language, which I extract: "In Japan, as in China, dwarf plants are greatly esteemed, and the art of dwarfing has been brought to a high state of perfection. President Meylan in 1826 saw a box, which he describes as only one inch square

by three inches high, in which were actually growing and thriving a bamboo, a fir, and a plum tree, the latter in full blossom. The price of this portable grove was 1,200 Dutch gulden, or about £100. . . . Pines, junipers, thujas, bamboos, cherries, and plum trees are generally chosen. . . . The art of dwarfing trees, as commonly practised both in China and Japan, is in reality very simple and easily understood. It is based upon one of the commonest principles of vegetable physiology. Anything which has a tendency to check or retard the flow of the sap in trees also prevents, to a certain extent, the formation of wood and leaves. This may be done by grafting, by confining the roots in a small space, by withholding water, by bending the branches, and in a hundred other ways which also proceed upon the same principle. This principle is perfectly understood by the Japanese, and they take advantage of it to make nature subservient to this particular whim of theirs. They are said to collect the smallest seeds from the smallest plants, which I think is not at all unlikely. I have frequently seen Chinese gardeners selecting suckers from the plants of their gardens. Stunted varieties were generally chosen, particularly if they had the side branches opposite or regular, for much depends upon this. A one-sided dwarf tree is of no value in the eyes of the Chinese or Japanese. The main stem was then in most cases twisted in a zigzag form, which process checked the flow of the sap, and at the same time encouraged the productions of side branches at those parts of the stem where they were most desired. The pots in which they were placed were narrow and shallow, so that they held but a small quantity of soil compared with the wants of the plants, and no extra water was given than was actually necessary to keep them alive. When new branches were in the act of formation they were tied down and twisted in various ways. The points of the leaders and strong growing shoots generally were nipped out, and every means were taken to discourage the production of young shoots possessing any degree of vigour. Nature generally struggles against this treatment for a while, until her powers seem to be in a great measure exhausted, when she quietly yields to the power of art. The artist is, however, on the watch, for should the roots of his plants get through the pots into the ground, or happen to receive a liberal supply of moisture, or should the young shoots be allowed to grow in their natural position for a while, the vigour of the plant, which has so long been lost, will be restored, and the finest specimens of Oriental dwarfing destroyed." (Fortune's "China and Japan.")

This system is carried out on a grand scale in nature's laboratory, in climbing mountains, or in going from temperate to

very cold latitudes, plants become dwarfed and altered in this, often contrasting remarkably with animals. The *raison d'être* is probably the same, I believe, in both cases, the size depending on the abundance of food rather than on the harshness of the climate. I will quote only one example of the effect of a hard climate and soil upon plants. I find the following passage in the "Journal of the Geographical Society": "The difference between the Daur birch (*betula Dahurica*) and the Mongolian oak (*quercus Mongolica*) is striking if compared in both localities—*i. e.*, the Kingan Mountains and the Amur Valleys. The species, which on the banks are knotted, almost stunted, and mostly dry-trunked (as the oak), are found some six or seven versts inland, quite straight, and of a height of sixty to seventy feet. The black birch undergoes an entire change in its exterior in the mountains. Its trunk in general divides into two, while on the banks it branches off into a great number of crooked and knotted boughs, reminding me of the old birch tree of my native land." ("Notes on the Amur and adjacent District," by Radde, *op. cit.* 422).

It is well known that the whole constitution of plants alters in different latitudes. Not only do the periods of flowering and seeding, and the rate of growth, but almost every character of their lives changes. Travellers relate how, under the intense actinic energy of the short arctic summer, plants may be almost seen in the act of growing; how the desolate shores of some of the arctic islands grow rapidly green, and as rapidly decay, with the same kinds of plants that are much more lethargic in their movements in other latitudes. Particular soils produce variegated leaves, while even more extraordinary results occur from similar causes, as the following passage from Mr. Darwin suffices to show: "The chemical qualities, odours, and tissues of plants are often modified by a change which seems to us slight. The hemlock is said not to yield conicine in Scotland. The root of the *aconitum napellus* becomes innocuous in frigid climates. The medicinal qualities of *digitalis* are easily affected by culture. The rhubarb flourishes in England, but does not produce the medicinal substance which makes the plant so valuable in Chinese Tartary. As the *pistacia lentiscus* grows abundantly in the south of France the climate must suit it, but it yields no mastic. The *laurus sassafras* of Europe loses the odour proper to it in North America." (Darwin, *op. cit.* ii. 274.) And thus he goes on with closely-crowded examples of the same law; but it is surely a law at issue with Mr. Darwin's great contention. Here we have climatic and other effects produced upon a whole class, and not a revolution created by the gradual development of some idiosyncrasy in a particular family, which, by giving that family

some advantage in the struggle for existence, enables it, cuckoo-like, to elbow out its neighbours.

In regard to the size of the individuals of some areas, which has been made an element in discriminating species, the cause is more clearly external. It has long been known that the reindeer of the highest latitudes are the largest in size, and that they diminish as they approach more temperate regions. Mr. De Capel Brooke and others have collected abundant evidence in regard to the Spitzbergen and Lapland reindeer. This fact has been enlarged by Dr. Baird into a general law. He says: "Many of our animals become smaller as we proceed southwards, until on the sea coast of Georgia, Florida, and the Gulf they reach their minimum. This is very strikingly seen in the common deer, which on the sea islands of Georgia is so small as to be readily lifted and thrown across a horse with perfect ease by a man of ordinary strength. It is in the sciuridæ next to the deer we find this law to prevail most decidedly. Nearly all the species of extensive north and south range will be found on careful examination to substantiate this position." This law is directly contrary to our *à priori* prepossessions; but it seems to show that we have been apt, perhaps, to lay too much stress upon the climatic features of zoological distribution instead of studying the distribution of food. With abundant food and a dry climate there seems no limit to the cold which big mammals can live in, as is well shown in the case of the Thibetan plateau; but this is no support to the doctrine of natural selection. Here also we have a cause operating upon a whole class. The horses and cattle of Holstein, which feed on rich meadow land, are big animals; the horses and cattle of Skye, of Brittany, etc., where food is poor and scanty, are small.

It is remarkable, even in a cursory view of the matter, how the number of species in a genus, that is, how the amount of variation, increases, as we advance from the cold regions about the Poles towards the tropics—advance, in fact, from where there is a monotonous constancy in the surroundings of life in climate, food, etc., to where there is immense variety in the same features. It is from the tropical forests that the exuberant profusion that characterise botanical and entomological catalogues is recruited. This law is apparently reversed in conchology, in which we find a very marked degree of variation in the arctic regions. These laws might be used effectively in geological reasoning. They seem to me to show that, inasmuch as they are not confined to particular classes, but affect the whole fauna and flora, that they also generalise a result of external influences upon life, and not any result of internal struggle.

I have said that geology might gain from a study of these

laws. It in turn has its lessons for us in this controversy. Among its deductions one of the most generally received is that of a glacial period, during which the climate of a large part of America and Europe was very severe and very uniform. This likeness would affect, if our contention be right, the zoology and botany of those regions, and would make it correspondingly uniform. This suggests a short review of their present botanical and zoological facies. Let us confine ourselves to the mammals of America and of Europe and of Northern Asia. It is well known that naturalists constitute this vast area girdling the globe in the northern part of the temperate and subarctic regions of the Northern Hemisphere one zoological and botanical province—that they divide it into two sections known as the Nearctic or American, and the Palæarctic or European and Asiatic regions. We shall confine ourselves to the mammalian portion of the faunas solely. Dr. Baird, Mr. Murray, and others, will hardly allow that any two mammals of these two regions are specifically the same. It is very rash in one like myself disputing with such authorities, but I cannot blind myself to the fact that the distinctions they insist upon, persistent though they be, are such as distinguish varieties rather than species. If we found one or two or half-a-dozen forms only in the one area having corresponding but slightly differing forms in the other area—a mere per-centage, in fact, of the whole fauna—then we might be sceptical; but this is not so. The resemblance extends to the whole or very nearly the whole mammalian fauna, and there is hardly a single species in the one area which has not a corresponding one in the other so nearly allied to it that it requires some discrimination to separate them. Even according to Dr. Baird, the wolves of America, except the Prairie wolf, are only varieties of one species, which he calls the American wolf, which is so like the European that Mr. Murray says, "Whether the European is the same as the American wolf is a much vexed question; the preponderance of opinion in former times was rather in favour of their identity, while nowadays the opposite view prevails"—this, be it noted, from a naturalist whose aim is to separate the faunas of the two areas as much as possible. Again, "A doubt, similar to that entertained regarding the wolves, exists as to the identity of the common red fox of Eastern North America with the common fox of Europe. Dr. Giebel (*"Saagethiere,"* 1859, p. 827) considers them the same, etc., etc. (*Vide* Murray, "*Distribution of Mammals,"* 109.) The *canis fulvus* is probably but a variety of the red fox. Another variety is the sooty fox, which Dr. Richardson says is found both in America and Iceland.

Pennant considers that the Canada lynx is the same species as the European. The common European weasel is undoubtedly

found in the States. (Richardson, *op. cit.* i. 45.) He says Captain Bayfield presented the Zoological Society with specimens of the common weasel, killed on the borders of Lake Superior, which agree in all respects with the European species. The ermine is found commonly in America from its northern limits to the middle districts of the United States. (*Id.* p. 46.)

The otters of North America and Europe seem to be identical; they only differ somewhat in colour and size. The sea otters of Eastern Asia and of America are, I believe, indistinguishable. The polecat is subject to some variation, and its varieties in the palaearctic regions have been reduced to one species by Radde, "Reisen in Suden von ost Siberien," St. Petersburg, 1862. The mink of America corresponds to the European *mustela lutreola*. (Richardson and Murray, *op. cit.*) The European and the American badgers are almost indistinguishable externally. Their dentition differs somewhat, due probably to difference of food. "The glutton, or wolverine, is generally believed to be found in all the three countries of Europe, Asia, and America, although there are still some authors who are disinclined to admit the identity of the Old World and the New World specimens." (Murray, *op. cit.* 116.) The most recent authorities on the bears, unless I have misread the testimony of Mr. Bush and Mr. Boyd Dawkins, is to discard many former species and to greatly consolidate the class. The grizzly bear is probably but a larger variety of the brown bear. "Middendorf," says Mr. Murray, "holds that the species of bear found in Europe and Northern Asia and the grizzly bear of North America are all varieties of the *ursus arctos*, and he gives a series of minute measurements and comparisons in support of his conclusions." De Blainville and Temminck more or less support this view. The walrus and the seals of the coasts of Northern Europe, Asia, and America are apparently the same. The *ovibos moschatus* is now confined to the Arctic Archipelago, North of America; but its skulls have been found on the Siberian tundras and the rivers Ob and Lena. The European and American bison and the extinct *bison priscus* are but varieties of one species.

The European mouflon, the Asiatic argali, and the big horn of America are very nearly allied, and the distinguishing characteristics relied upon by Dr. Baird ought not to be treated as specific. (See Ermanu's "Travels," ii. 457, who identifies the Argali and Rocky Mountain sheep as identical.) The chamois, Mr. Murray says, is not distantly allied to the American so-called mountain goat, the *aplocerus montanus*, and stands in affinity between it and the *Antilocapra Americana*. The American moose and European elk are almost indistinguishable. Dr. Richardson's elaborate examination only discloses the fact of

the American form having a slightly broader face. The reindeer of Europe and the cariboo of America are also identical, save in very slight particulars, as the Lapland and Siberian varieties also differ from one another. The red deer is spoken of by Dr. Richardson as a very near relative indeed to the American wapiti, and it was long considered by the fur traders as the same species. The roedeer is compared with the American roe or long-tailed deer. The common mole extends with three varieties from Europe to Japan. A similar mole is found in California, which Mr. Lord says he could not distinguish from the Japanese species (or variety), while the whole American genus scalops is so like our moles that Mr. Murray says that, until a naturalist takes them in hand and points out the differences, they would be passed by any moderately observant person as identical. (*Op. cit.* 231.) It is hard to see the characteristics which have made zoologists erect the European variable and the American polar hare into separate species. Even Mr. Murray says they are so much alike that there is the greatest difficulty in distinguishing them. (*Op. cit.* 253.) The squirrels form a genus dear to species mongers, and most perplexing to students. Pallas considered the *sciurus lysteri* of America as identical with the Asiatic *sciurus striatus*. (*Vide* Richardson.) Brandt and the Russian zoologists consider the *spermophilus eversmanni* of Siberia and the *S. parryi* of America as identical. Dr. Richardson says the Quebec marmot is like the *arctomys bobac* of Europe in form and general appearance.

The North American and European beavers, long considered identical species, have only been recently separated by the hypercriticisms of zoologists. Even Dr. Baird allows that the *arvicola agrestis* is identical with an American mouse. Forster and Pennant both identified the former with the *arvicola Pennsylvanica*. Middendorf has reduced the American lemmings to two species, both found in the Old World as well as the New. (Murray, 269.) Pennant makes the American field mouse the *mus leucopus*, only a variety of the *mus sylvaticus* of Europe, and in this Richardson agrees.

This is but a bald and rapid survey of a vast field. Some mistakes occur possibly in it; but the vast majority of the cases quoted are supported by the names of too experienced naturalists for much doubt to arise as to their general correctness, and the moral to be drawn from them is that the mammalian fauna of America and Europe are practically identical, and most probably descends at a no distant period from common ancestors. How have the differences, such as they are, arisen? By means of natural selection? Surely not. Along the arctic borderland, where the conditions of climate and of surroundings have been

constant, there has been no variation. The polar bear, the wol-verine, the hare, the lemming, the walrus, the white fox, the stoat, etc., etc., are the same in all longitudes, and be it remarked that it is here, if anywhere, that a struggle for existence must be going on—where food is scarce and the conditions of life most severe; and, if Mr. Darwin's theory be the true one, it is here that forms with slight advantages will have the greatest opportunity; and in such a vast area as the whole polar borderland we ought to find, if his theory be true, many cases where inferior forms are giving way to superior ones evolved from the struggle; but, on the contrary, we find here a perfect monotony of type kept up, and this type maintained since the earlier era of the Pleistocene deposits, and not in one species only, but in the whole fauna. Surely it would be difficult to find a better test of the whole position; but let us continue. It is when we come to the more temperate latitudes of the Subarctic Regions, with their various climates and conditions, that we find a similar variation occurring in our forms, and we are compelled to conclude that such variation is in fact due to no struggle for existence, but to a changed food, climate, or habit, and this is amply confirmed in other ways.

Civilised man, as a rule, is little affected by change of *habitat*, for he has facilities for taking with him food, clothing, and housing, and can in most climates by artificial means produce a more or less uniform condition in his surroundings. It is not strange, therefore, that we do not find such marvellous changes among the emigrants to some climates that the *à priori* philosophy of some writers, and perhaps our own, would seem to require, or at least it takes a very long period for the effects to be produced. The case of North America is, strangely enough, a remarkable contrast to the general rule. The change that two hundred and fifty years have produced in the inhabitants of the old states of New England is most marked. Although of Anglo-Saxon, or rather, *pace* Mr. Freeman, of English descent, they have acquired a very distinct type. Their hair has grown long, scant, and wiry; their whiskers have almost disappeared, and the hair on the face been more and more confined to the chin. The face has grown square, the cheek-bones projecting, the limbs long and wiry, the body thin, the colour sallow and brown; and so markedly, that the typical Yankee is a well-known sub-variety of the human species. In all these respects the race has rapidly approached to the indigenous American type—namely, that of the Indians. It will not be argued that this has been due to the mixture of native blood. Pocahontas was almost a solitary case. Neither will it be argued that natural selection has produced it. The land has been too wide and human beings too much in de-

mand for there to have been any struggle for existence among them. Even the most decrepid and abnormal individuals have been welcome, and further, as I showed in the previous paper, the tendency of the American type is to die out, and the population is practically kept up by the immigrants and their immediate descendants of two or three generations. The only reasonable cause is that of a change of climate, etc., which rapidly converts the English type into one like the indigenous Indian type, a great external cause dependent upon no struggle of individuals, nor operating from within, but acting upon the whole race simultaneously. Let us now turn to the Spanish colonists of Central and South America, and let me premise that Creole, as used in South America, means one born in the country as distinguished from an immigrant. Mr. Kennedy, writing of Yucatan, says: "The Creoles were evidently to be distinguished from their European brethren. With them, without any suspicion of mixture of blood, I could observe the figure more lanky, the hair coarser on the head and scantier on the face, the colour and skin assuming a parchment hue, and the whole character becoming apathetic, with a drawling accent different from the natives of Spain, which could scarcely have been brought about by the heat of the climate merely, inasmuch as that differed little from the temperature of Spain, but might have arisen from geological causes operating throughout the continent." ("Supplementary Notices of the American Indians," "Journ. Eth. Soc." 1857.) This change has not been confined to the white race. Mr. Kennedy, whom I have previously quoted, and who was one of the soundest ethnologists our country can boast, and whose papers have not had their meed of attention drawn to them, says: "In the course of upwards of thirteen years' residence at the Havana, where I had many hundreds of Africans under my superintendence, I soon became able easily to recognise youths who had been born in Africa from those of the same class who had been born in Cuba. If they had been brought very young from Africa, as they very frequently were, they grew up equally intelligent and cleanly, the one as the other, but still distinctly different from each other in the character of the countenance. Their colour at first would assume a brighter, glossier black than the colour of the adult African. . . . What that colour might eventually become in the island of Cuba, which is on the borders of the tropics, in the lapse of any considerable number of years, I could not judge of, as, from the policy of the slave dealers and slave owners, few females comparatively were brought over, as they found it easier to buy the adult slave ready for work than to rear up their progeny. But in the coloured population of the Bahama Islands and of the Southern States of the American

Union I observed their colour was already manifestly becoming lighter or brown or olive—I may say so universally that I could only ascribe it to the climate, and not to any admixtures. The hair certainly still remained woolly, but the climate was perhaps yet too familiar to the African in temperature to have any effect upon it for a much longer period of time than had elapsed since their progenitors were brought there. But this was not all. Not only was the colour lightened, but their features were also altered, and I thought I could distinctly trace in the coloured population the same cast of countenance which we find marks the white natives of that continent in a very early stage of their generations. This cast of countenance some of our ethnographers may perhaps some time hence describe as the Yankee type, . . . for which, if any illustrations are required, I have only to refer you to the portraits of the Presidents and other leading statesmen of the Union and to the general average number of American citizens, whom we cannot fail to recognise almost at a glance in our streets. We observe in them an elongated countenance of a whitey-brown colour, strong coarse hair, a rigidity of features, lank figures, with a length of arms and legs disproportionate to their frame. The females lose the colour of their European parents, and attain a statuesque style of beauty, in like manner very different from the softness and fulness of the English—these changes resulting in the same type, whether their parents were of British or Continental origin.” (“Ethnological Notices of the Philippine Islands”—“Transactions Ethnological Society.”)

I am told by a friend long resident in Brazil that the same fact as to the alteration of the negro type has been noticed in the Brazils. The same cause is, I believe, the origin of the various differences which separate the so-called species of North America and the Palæarctic Regions. The red fox of America has been supposed by some inquirers to be descended from some imported European foxes. Dr. Newberry says that in Ohio, Kentucky, and Michigan, the most densely-wooded of the middle states, the pioneer settler found only the grey fox, or at least that species occupied the territory so nearly exclusively that they considered any other as like themselves—interlopers. As the forest gradually fell before the axe of the woodman, and broad and continuous stretches of waving grain replaced the thickly-set trunks of oak, ash, and hickory, the grey fox became gradually more rare, while the swifter, stronger, and more cunning red fox by degrees almost entirely usurped its place. Hence the farmers supposed they had themselves introduced this farmyard pest, and that it had been the companion of their migration from the east. Dr. Baird remarks that the fact of

their present abundance and extent of distribution is no barrier to the reception of this idea, as the same has been the case with horses brought over and set at liberty by the Spaniards after the discovery of America. *Nor is there any serious difficulty to be met with in the different characteristics of the American animal, as the finer fur, brighter colour, narrower and more delicate head, sharper muzzle, etc., as it is precisely in such peculiarities that the Anglo-American race differs from its English stock.* (Murray, *op. cit.* 110.)

A revolution is now progressing in Lancashire, familiar enough to our doctors, in which external influences are greatly altering the type of the inhabitants. The mill system, which confines the people in a hot damp atmosphere, is having a deteriorating tendency. They are becoming much more stunted in size, crooked in limbs, and haggard and sallow in complexion, and this notably among the weavers, who, in my own town, Rochdale, are a remarkably pure race, not having mixed with the Irish immigrants. The decrease in stature is very remarkable.

The subject is so fertile that our commentary might become interminable. It is time one came to an end. But it is hardly necessary to have gone over the ground even thus cursorily; the facts of domestication are enough. Wherever plants and animals have been domesticated—which means that their food and outward surroundings have been enormously modified—there we find correspondingly enormous variation: the greater and more assiduous the cultivation the greater the variety. Move the common field flowers into the green-house, and they at once begin to vary. Move the green-house plants into the open, and, where they manage to survive the change, they are similarly altered. The almost endless varieties of cabbage, strawberries, apples, etc., etc., which have arisen from common ancestors is a very forcible example of the alteration induced by cultivation and altered circumstances, for these varieties do not occur in the wild state, where the conditions are constant.

I have tried to test another factor in Mr. Darwin's theory, and I confess that I cannot see how his reading of the evidence can be supported. Wherever we can examine a gradual change of type in progress, so far as we know the change has been continuous along the whole line, and has not been in favour of any individual and its progeny; I refuse to accept human selection in the laboratory as a test at all, until I see some evidence that selection is a part of nature's scheme, save in very exceptional cases. I see that a change affects a whole type at once wherever I can examine change going on in nature beyond the control of man, and I must conclude that this has been the case in former times as much as now. If I could find that in surveying the palæontology of any deposit, that a particular type at the bottom of the stratum

was very scarce compared with others, and that at the top of the stratum it had increased, so as almost to have monopolised their place—if I found this to be the rule, I should then say that natural selection was supported by the geological record, although I could not support it from a survey of the current and contemporary topography of life; but I can find no such evidence, and I am forced to conclude that an hypothesis founded upon its existence must have a faulty foundation. In the next paper of this series I shall commence an examination of a much more potent and influential form of variation than that to which I have referred in this paper, and which I believe to be even more hostile to Mr. Darwin's main conclusion. This is sudden variation or sporting, and I shall commence by examining the facts of Albinism and Melanism.

DISCUSSION.

Mr. BOUVERIE-PUSEY said he was sure all felt grateful to Mr. Howorth for the interesting paper he had read, giving an account of numerous instances of variation, real or supposed. In investigating these things we ought carefully to examine our facts, and to make sure, first, that the thing supposed to have varied is really descended from the thing it is supposed to have varied from, and without intermixture; and, secondly, to distinguish the effects of disease or ill-health from those of change of type. To examine in this way all the instances given in the interesting paper we had just heard would fill a thick volume. He would only remark on the case of the rabbit. Mr. Howorth said that black rabbits, etc., when turned loose, revert to the original grey colour. He did not see how it could be known that this takes place without intermixture. His father turned out black rabbits and also white rabbits twenty years ago, and now one or two of those colours occasionally appear (by reversion) in the same place. He was inclined to think, pending further evidence, that tame rabbits turned loose are absorbed into the wild rabbit rather than that they revert to it.

Sir DUNCAN GIBB warmly eulogised the author's paper, but he himself had considerable diffidence in rising to say a few words, because the subject was one upon which he did not feel competent to discuss, although he admired and respected Mr. Darwin as one of the cleverest men of the day, upon whose views much variety of opinion existed. In reference to the changes in the colour of the human hair mentioned by the author, he would remark that much importance could not be attached to it when induced by external circumstances, and indeed sometimes in a single individual his hair will vary in depth of colour according as he goes north or south several hundred miles. As an old sportsman he recollected very well that the hares he has shot in Canada in the winter time were perfectly white like the snow, and in the summer season the same animals had a bluish grey coat of

fur, yet no conclusion one way or the other should be drawn from this fact so far as Darwinism is concerned. The same also with bones and feathers. But as regards the bones, every physiologist was aware that their colour can be changed by feeding an animal upon certain substances, madder for example, which gives them a red colour. These things, therefore, are exceptional, and not the rule. The author has described the peculiar appearance presented by the American people, with their mode of speaking, etc. Now he (Sir D. Gibb) thought their mode of living had a great deal to do with this; they were rapid eaters, and scarcely took time to masticate their food, which accounted for a great deal both in their appearance and their state of health. Their mode of speaking, with its accompaniments, was that of the original English provincialism of two centuries back, now much intensified; and in our inland counties of the present day the traveller who has been in the United States sees and hears the progenitors of Yankee land. One observes nothing of this kind among the English Canadians of the present day, for there is a total absence of the provincialism of the United States unless it becomes acquired by living near the borders of the States. To say that the American people as a race are acquiring the appearance of the Indians who are dying out, from living in the same country, is a theory that has not a shadow of proof to support it.

Mr. W. J. GRAZEBROOK thought it was generally known that the hares on the Scotch hills became white in the winter season and changed colour again in the spring, a change of which every sportsman was aware. Referring to the remarks of the learned doctor who preceded him, he had often been struck with the marked characteristics of physiognomy by which visitors coming from the United States could be recognised even in the streets of London. It was extraordinary that such changes should occur in the course of a generation or two. He thought also that native-born Canadians had a characteristic appearance likewise, although differing considerably from the Yankees in appearance. If the descendants from English parents, without any admixture of Indian blood, came to assume the characteristics of the indigenous Indian races in a few generations, he had for many years held a theory which might account for this tendency to assume the indigenous type. He was strongly of opinion that the atmosphere of the United States had a greater proportion of oxygen present than in the air in England, the cause being the greater proportion of vegetation than in England. An evidence of this might be found in the earlier maturity of the American people, their greater vitality (or energy) in early and middle life, and their decay at an earlier period than in England. All this looked like a more rapid combustion from a superabundance of oxygen in the air. His experience of marine zoology (having kept aquariums at the commencement of this science) had led him to study the laws by which the balance of nature is maintained, both on the land and in the sea, the carbonic gas of the animal world being absorbed and corrected by the oxygen of vegetable life, hence, owing to the immensely greater proportion of vegetable life in

America, he found grounds upon which to base his theory that, on an accurate examination, there would be found a slightly greater amount of oxygen in the American atmosphere than in England. Considering the vast volume (3,600 gallons per diem) passing through the lungs of an adult, and the same cause also probably affecting in like degree the constituents of his food both animal and vegetable, a sufficient cause may be found in this to account for the tendency in man to revert back after a few generations to the original indigenous Indian type.

THE PRESIDENT remarked that, although he fully admitted the value of the collection of facts bearing upon the production of changes in races of animals, in consequence of changes in the outward conditions to which they were exposed, and duly appreciated the care and labour bestowed upon the compilation of his materials by the author, he was quite at a loss to perceive in what way the paper bore adversely on the Darwinian hypothesis, so far as that was based upon "natural selection and the so-termed struggle for existence." On the contrary, it seemed to him that so far as such changes as those noticed by Mr. Howorth prove anything at all, they are, like many of the facts connected with artificial selection or breeding, rather in favour of the hypothesis than the reverse. It appeared obvious to him that the circumstances and considerations adduced by Mr. Howorth, so far as they related to the production of diversities of race by natural causes, only served still further to confirm the self-evident proposition that in all cases of important changes in the external conditions, those forms or varieties of animal or plant best fitted to meet them must eventually remain occupants of the field. And surely there is nothing in this opposed to the Darwinian hypotheses.

DR. RICHARD KING and Mr. E. CHARLESWORTH also joined in the discussion.

The author replied, and the meeting separated.

MAY 12TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

THE minutes of the previous meeting were read and confirmed.

The following members were elected: WILLIAM GEORGE THORPE, Esq., F.G.S., Gloucester House, Larkhall Rise, S.W., and Burton's House, Ipplepen, Devon; J. ELDRIDGE SPRATT, L.F.P.S. Glasgow, 8, Bolton Row, Mayfair, W.

The thanks of the meeting were voted for the following presents:—

FOR THE LIBRARY.

- From the EDITOR.—*Revue Scientifique*, Nos. 44 and 45. 1874.
 From the IMPERIAL ACADEMY OF SCIENCES, VIENNA.—*Sitzungsberichte philo-histor-classe*, band 74, heft 1, 2, 3; ditto *Math-naturw.* 1873, abtheil i, Nos. 6 and 7—abtheil ii, Nos. 4, 5, 6, 7—abtheil iii, Nos. 1-5.
 From the ASSOCIATION.—*Proceedings of the Geologists' Association.* Vol. iii, No. 5.
 From the REGISTRAR-GENERAL.—*Statistics of New Zealand.*
 From JAMES BURNS, Esq.—*Researches in the Phenomena of Spiritualism.* By William Crookes, F.R.S.
 From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—*Zeitschrift für Ethnologie*, Sechste Jahrgang, heft i.
 From the AUTHOR.—*Startling Facts in Modern Spiritualism.* By Dr. N. B. Wolfe.
 From the EDITOR.—*Nature* (to date).

Messrs. R. and S. Garrard and Co., exhibited a collection of gold objects recently brought from Ashantee.

Mr. Hyde Clarke communicated the following note:

On the RELATIONS of CULTURE of the ASHANTEES. By
 HYDE CLARKE.

THE occasion of the exhibition before the Institute, of works of Ashantee industry, makes it desirable to consider their relations of culture.

Language is one element of culture, and independent of races. The Ashantee is almost the same as the neighbouring Fantee, and these again are allied to several other West African groups, the Houssa, the Mandingo, and Bambarra, the Yaruba, the Ebo, and the Fulah; all these are remarkable populations in that region, and relatively advanced. The Houssa (to which the Kossa, Pessa, and Susu are related) is used as a commercial language far into the interior. The Fulah and the Mandingo are second to it in this respect. All three groups have felt the influence of Islam.

On looking farther afield, a very remote relation of Ashantee in distance, but very near in resemblance, is found in the Korean of the peninsula north of China. Even the numerals have a strange affinity. (3 *esa*, *ucsh*; *sai*, *Korean*; 4 *enan*, *ucsh*; *nai* *Korean*.)

The main body of languages allied to the West African, is to be found among Indian aborigines, known as the Kolarian, and

including Kol, Sonthal, Mundara. These tribes, pushed up into the hills by successive invasions, are by no means on a level with the West Africans in political advancement; but, under English administrators, are displaying industry and making progress. Of these languages the Mundara proceeds very closely side by side with Houssa, so that the conformity of the languages is beyond doubt.

In the Caucasian centre we find another large series of kindred languages among the Lesghian. Setting aside for the moment the political aspects of these people, it is germane to the present subject to note that these people have always been famous in the East for their skill in metal working and ornament, though chiefly as applied to arms. This is, to a certain extent, a parallel with the Ashantee.

The remaining member of the languages in the Old World is the Basque. Its relations in West Africa are with Mandingo and Bambarra.

It is to be observed, as an ethnological law, that in the present condition of allied languages in local groups or regions, the relations of the members of a group, *inter se*, are sometimes not so strong as those with the member of another group; and to obtain an exact appreciation, we must bring together all the members of the class or family. Thus the West African, the Lesghian, or the Kolarian, are most efficiently studied when brought together. There are relations of this family with the Akkad or Sumerian of Babylon, which, so far as regards the Basque, have been pointed out by Mr. Oppert and the Rev. Mr. Sayce. With regard to American members, there are languages which have a close resemblance; but whether they should be assigned to this class, or the near-lying Agaw, I am as yet unable to determine.

One characteristic of these populations is their warlike dispositions, and desire to attest their independence even against the greatest powers. The Basques resisted the Romans in their zenith as their successors now do the Spaniards. The Avars and Huns assisted in the destruction of the Roman empire; under the leadership of Shamyl they resisted the Russians. After ages of Hindoo subjection, the Sonthals rose in insurrection against our Indian empire. As to Ashantees, Houssas, and Kossas, it is needless at this time to speak of them.

As to the chronological position of these West African languages and culture, it is desirable to say something. Undoubtedly they are prehistoric. The radicals give evidence that the people were passing from an age of caves and stone implements to one of tree dwellings and of the use of bone. The language attests to a mythological dual basis of positive and negative.

Close by, mixed up with these West African languages, is the Wolof, a people who style themselves "black". The Wolof is connected with the Khond, a series of tribes lying alongside the Kolarian in Central India. The Dahomey and Whydan populations of the West Coast are related in language to that bloodthirsty Carib race which occupied the West India Islands and Guiana, and with the Aino race of Yesso.

The Kouri of the West Coast is connected with the Lenca of Honduras. The Egbele and numerous other West Coast languages appear to be related to the Agaw, which is represented in India by the Gadaba, and in Ceylon by the Rodiya.

Thus we have in West Africa and in India the same series of prehistoric races driven together; but in Africa, having been less pressed upon by the historic races, they occupy a higher position. Members of a similar series are to be recognised in other central regions of migration, as Caucasia, North-Eastern Asia, and South America.

The practical point for our consideration appears to me to be this—that if the Ashantees and others, as members of the Vasco-Kolarian race, have held a position strictly in virtue of prehistoric culture, that their advancement may be promoted by the introduction of a higher culture. Of this the Sonthals and Mundaras appear to be yielding fruit.

DISCUSSION.

Colonel HARLEY, C. B., thought that the gold skull and face was cast from an ordinary clay mould, and was probably intended to commemorate the head of some distinguished chief and warrior. The breastplates were the usual badges worn by high officers of the king when sent on special missions. The sandals were Mandingo work, made by Mahommedans. The writing upon the soles was the Arabic character, but the gold filagree work upon them was Ashantee. The gold mines within the Protectorate of the Gold Coast, in the districts of Wassaw, Denkera, Akim, and the Volta, had never been developed, so far as we had any information on the subject, beyond the mere digging of pits, from eight to twelve feet square, to a depth from six to eight feet, and washing the clay and sand for the gold. Machinery has never yet been used; and gold is obtained, after heavy rains, by simply washing the surface sand which is brought down in the floods. He thought there was sufficient evidence to warrant the supposition that there are considerable and valuable deposits of gold to be found within the Protectorate. The tools used in making the gold ornaments and filagree were of the rudest and commonest description of iron; and yet the Elminas and Cape Coast people could produce work as delicately and finely made as the Cingalese or Maltese in silver. The natives do not originate anything, but they can work accurately from either pattern or drawing.

Mr. SODEN SMITH observed that the designs of the gold-work exhibited gave evidence not only of that love of close imitation so characteristic of the native African work of that region, and to which was due the reproduction of a heterogeneous variety of European models as well as of many natural objects ; but that he also traced in them the influence of an older and superior art, the traditions of which seemed in some cases to be dying out. Some of these traces of ancient influence seemed to ally the work to Abyssinian models, and in this also it was that he had traced a resemblance to Egyptian tradition ; as, for example, in the treatment of the large gold head, with its conventional manner of representing the beard. He had guarded himself by observing that such resemblances or analogies were often apt to be superficial, merely resulting from the widespread use of common goldsmith's processes ; thus it is that some of the specimens, especially the discs, somewhat resemble Celtic work ; other pieces have a superficial likeness to Mexican objects, and to those gold ornaments obtained in Columbia from the graves of the native races. That the ancient processes are dying out is evidenced by the ornaments on some specimens being now produced by casting, instead of, as seems to have been originally the case, by the more difficult and more complete method of working in twisted wire ; that such wire-work is still understood can be seen by its application to the bases of the curious griffin-like ornaments, as well as to the staff-heads and other specimens ; but it seems to be a tradition which, in the case of certain work, as the flatted discs, is gradually dying out ; perhaps this may be owing to a greater skill than formerly having been acquired in the process of casting. Some peculiar methods of laying wire-work together, employed in Anglo-Saxon and Scandinavian work, he had not observed among that of the Ashantees. The sense of symmetry which guides Ashantee ornament is well seen on many of the specimens, especially the massive gold disc or breast ornament, on which a series of keys are represented, symmetrically radiating from a centre ; other objects, arranged so as to balance each other, occupying the remainder of its surface. This instinct of symmetry gives a character even to much of the work formed on ordinary European models. With respect to the gold in use, Prof. Church's analysis gave in 100—gold, 90.06, silver, 9.94, with a very minute trace of copper : the specific gravity being 17.55. Referring to the processes of metal work in use among the Ashantees, he had heard with surprise that in the opinion of an eminent authority it was impossible that some of the larger objects had been cast. A tolerably minute examination had led him to believe that, for example, the large gold breast-discs were certainly cast, as well as the models of shells, etc. The process in use was like that known as *cire perdue*, a mould being made of clay and charcoal, tempered together over the wax model, which, being then melted out, its place was taken by the gold run into the mould ; the red hæmatitic earth, some of the remains of which give the red colour to the casts, seems used to make them deliver more freely from the moulds. The process of *repoussé*, or beaten-up work, is much in use,

as on the slippers, etc.; in some cases a wooden model seems to be carved, and the gold beaten over it; gilding is not used, but overlaying with plates of gold instead, often rudely pinned together. Soldering, properly so-called, seems comparatively little practised; but welding together the gold in a very complete and ingenious manner is employed.

The thanks of the meeting were unanimously voted to Messrs. Garrard for lending the objects for exhibition and examination.

The following paper was read by the Mr. F. Galton:

On a SERIES of MEASUREMENTS for STATISTICAL PURPOSES, recently made at MARLBOROUGH COLLEGE. By WALTER FERGUS, M.D., and G. F. RODWELL, F.R.A.S. [With Plate x.]

IN accordance with the wishes of the Institute, as expressed by Mr. Francis Galton, we have submitted to various measurements 550 boys belonging to this school, and we propose to give a brief account of the modes of measurement and of the results obtained.

It was considered desirable to obtain the following details:

1. Weight. 2. Height. 3. Head measurement. (The head was measured near the base of the skull, the tape being placed immediately above the occipital protuberance behind, and immediately above the sinuses in front.) 4. Girth of chest. 5. Girth of the flexed arm, measured at the broadest portion of the biceps muscle near the shoulder, the muscle being at rest. 6. Girth of the leg measured at the broadest portion of the calf.

Each complete measurement occupied (with the weighing to quarters of a pound) somewhat less than two minutes; when one person undertook the measurement, a second the weighing, a third recorded the results. The requisite appliances consisted of: 1. A small five-guinea lever balance (by Hawksley) carefully tested, and found to weigh easily to quarters of a pound when loaded (fig. 1, pl. x). 2. A simple appliance for taking heights quickly, consisting of a vertical board, A (fig. 2) graduated between 4 ft. and 6 ft. 6 in., and provided with a sliding square board B, at right angles to it.* This board on being brought

* A bracket sliding between vertical guides, and balanced by a counterpoise acting over two pulleys as in fig. 3, will be found easy, quick, and sure in action. The vertical board and foot piece may be dispensed with, if the guides can be nailed to a wall.—F. GALTON.

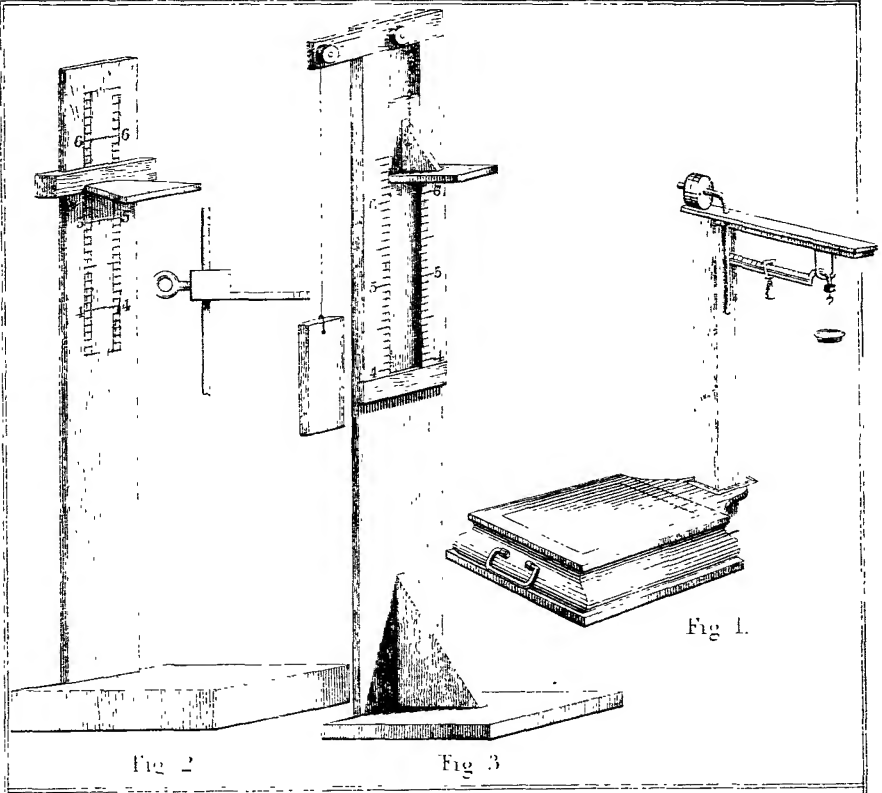
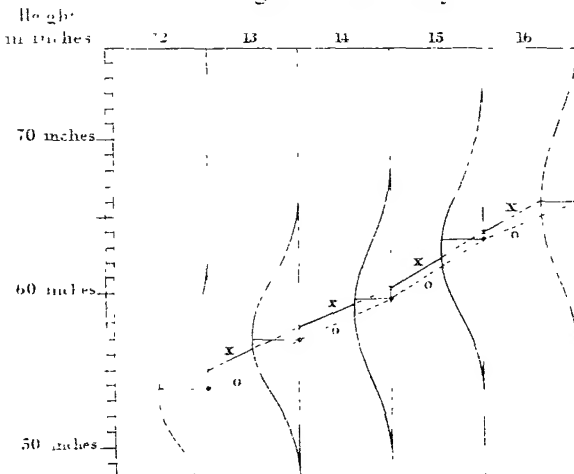


Fig. 2

Fig. 3

Fig. 1

Age last Birthday.



down upon the head of the person to be measured, insures a level surface, and at the same time acts as an index to the scale. The board moves with just sufficient friction to enable it to remain wherever it may be placed without sliding.

3. About 4 feet of tailors' measuring tape, divided into inches and eighths.

The boys were weighed with their boots on; then the height without boots was measured; the chest measurement was taken over the shirt and waistcoat, but without the coat; the arm and leg were bared before measurement.

TABLE I.—HEIGHT.

Height without Boots.				AGE LAST BIRTHDAY.									
Above.		Under.		19	18	17	16	15	14	13	12	11	10
feet.	in.	feet.	in.										
4	..... 3	4	..... 4	...	...	...	...	...	1	...	...	..	..
4	..... 4	4	..... 5	...	...	...	...	...	...	...	3	1	...
4	..... 5	4	..... 6	...	...	...	...	...	1	...	2	...	1
4	..... 6	4	..... 7	...	...	...	...	...	3	6	1	2	1
4	..... 7	4	..... 8	...	...	...	...	...	3	8	8	4	1
4	..... 8	4	..... 9	...	...	1	...	1	2	11	5	1	...
4	..... 9	4	..... 10	...	..	...	2	3	7	6	7	5	...
4	..... 10	4	..... 11	...	...	...	...	5	9	12	3	1	...
4	..... 11	5	..... 0	...	...	...	3	6	11	18	1	...	...
5	..... 0	5	..... 1	...	...	3	...	17	11	19	3	...	...
5	..... 1	5	..... 2	...	1	...	2	13	9	10	...	...	...
5	..... 2	5	..... 3	...	...	...	3	6	13	11	5	1	...
5	..... 3	5	..... 4	...	2	1	6	18	8	...	...	...	...
5	..... 4	5	..... 5	1	2	2	15	22	5	...	...	...	...
5	..... 5	5	..... 6	1	2	4	15	10	6	...	...	...	...
5	..... 6	5	..... 7	...	3	6	10	14	3	...	...	...	...
5	..... 7	5	..... 8	1	1	9	19	11	...	1	...	...	...
5	..... 8	5	..... 9	1	1	5	11	5	...	...	...	...	...
5	..... 9	5	..... 10	...	3	6	5	1	...	...	...	...	...
5	..... 10	5	..... 11	...	1	4	4	1	...	...	...	...	..
5	..... 11	6	..... 0	...	2	1	2	...	...	...	...	...	...
6 feet and	above.....	...	...	...	1	2	3	...	...	...	...	...	...
Total number.....				4	19	47	103	140	90	96	34	14	3

The extreme limits were found, on the one hand, in the case of a boy of sixteen years and ten months, who measured 6 feet $3\frac{1}{2}$ inches; and, on the other hand, of a boy fourteen years and nine months, who measured 4 feet $3\frac{1}{4}$ inches. The complete measurements of these boys are as follows:

Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
A... 11 st. $2\frac{3}{4}$ lbs	6 ft. $3\frac{1}{2}$ in	$22\frac{3}{4}$ in	32 in	$9\frac{1}{4}$ in	$13\frac{1}{2}$ in	16 yrs. 10 mths.
B... 4 „ 8 „	4 „ $3\frac{1}{4}$ „	21 „	$26\frac{1}{2}$ „	$6\frac{1}{2}$ „	10 „	14 „ 9 „

TABLE II.—WEIGHT.

Weight (in usual indoor dress, with boots on) 1 stone = 14 lbs.		AGE LAST BIRTHDAY.									
Above.	Under.	19	18	17	16	15	14	13	12	11	10
4½ stone	5 stone.....	...	...	...	...	...	1	...	4	...	1
5 "	5½ " .....	...	...	...	1	...	2	4	5	6	1
5½ "	6 " .....	...	...	...	...	2	5	17	12	2	1
6 "	6½ " .....	...	...	1	1	7	19	32	7	6	...
6½ "	7 " .....	...	...	1	1	13	14	24	4	...	...
7 "	7½ " .....	...	...	3	2	25	22	13	1	...	...
7½ "	8 " .....	...	...	4	9	20	8	4	1	...	...
8 "	8½ " .....	...	1	3	7	18	11	1	...	...	...
8½ "	9 " .....	...	2	2	20	22	5	1	...	...	...
9 "	9½ " .....	...	4	8	21	15	2	...	...	...	...
9½ "	10 " .....	...	2	6	11	14	...	...	...	...	...
10 "	10½ "	3	4	7	12	3	1	...	...	...	...
10½ "	11 "	1	2	6	9	...	...	...	...	...	...
11 " and above .....	...	...	4	6	9	1	...	...	...	...	...
Total number		4	19	47	103	140	90	96	34	14	3

The extreme limits were found, on the one hand, in the case of a boy of 16 years and 355 days, who weighed 12 stone 5½ lbs., and, on the other hand, of a boy 14 years and 9 months (*vide* B. above, in connection with height), who weighed 4 stone 8 lbs.

TABLE III.—HEAD MEASUREMENTS.

Head measurement in inches.	AGE LAST BIRTHDAY.										Total.
	19	18	17	16	15	14	13	12	11	10	
20	1	...	...	3	3	...	...	7
20 $\frac{1}{4}$	1	1	...	4	2	...	...	8
20 $\frac{1}{2}$	1	4	3	8	4	2	...	22
20 $\frac{3}{4}$	1	5	8	7	1	1	1	24
21	4	5	15	12	13	9	3	1	62
21 $\frac{1}{4}$	2	3	6	9	6	7	3	...	...	36
21 $\frac{1}{2}$	1	1	17	37	24	20	6	4	...	110
21 $\frac{3}{4}$	5	5	12	19	10	14	5	1	...	71
22	1	3	9	21	18	15	14	1	2	1	85
22 $\frac{1}{4}$	1	10	9	13	5	3	...	...	...	41
22 $\frac{1}{2}$	3	2	4	19	13	6	3	...	1	...	51
22 $\frac{3}{4}$	2	7	5	4	1	...	...	...	...	19
23	1	2	1	1	...	...	...	...	...	5
23 $\frac{1}{4}$	1	...	...	1	...	...	...	...	...	2
23 $\frac{1}{2}$	1	...	3	...	...	...	...	...	...	4
23 $\frac{3}{4}$	1	...	...	...	...	...	...	...	1
24
24 $\frac{1}{4}$	1	...	...	...	...	...	...	...	1
24 $\frac{1}{2}$	1	...	...	...	...	...	...	1
Total number mea- sured	4	19	47	103	140	90	96	34	14	3	550

The complete measurements of these boys are as follows :

	Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
A ..12 st. 5½ lbs	5 ft. 11½ in	22¾ in	35½ in	11¾ in	14½ in	16 yrs. 35½ d.	
B... 4 8	4 3½	21	26½	6½	10	14 „ 9 mts.	

We gather from these results that 89 per cent. of the boys have a head measurement of, or exceeding, 21 inches, while 11 per cent. have a head measurement of less than 21 inches. Of these latter, half the number are between twelve and fourteen years of age, and no one had attained his seventeenth birthday. Again, 2½ per cent. have heads which measure 23 inches and upwards; their ages being between fifteen and nineteen. 38 per cent. of the heads measure 22 inches and upwards; while 20 per cent. measure 21½ inches. The greatest range of measurement is seen to occur in the case of the 103 boys who were sixteen last birthday. Here we find two boys whose ages differ by less than a month, while the girth of their heads differ by 4½ inches—the extreme limits of the entire series of measurements, viz., 20 and 24½ inches.

The complete measurements of these boys are as follows :

	Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
D....	11 st. 8½lbs	5 ft. 7 in	24½ in	37½ in	11½ in	15¾ in	16 yrs. 9 mts.
E.....	5 „ 6½ „	4 „ 9½ „	20 „	27 „	6¾ „	10¼ „	16 „ 9 „

We are unable to trace any distinct connection between intellectual vigour, and head measurement; for although many of those who possess the higher girths of head are intelligent boys of considerable ability, it must be confessed that many boys whose heads measure less than 22 inches, are in ability, perseverance, and general culture, quite equal to those who possess the higher measurement. Let it, however, be borne in mind, that a simple measurement at the base of the brain, does not of necessity give any true indication of brain-capacity, because skulls differ in height, as well as in length and breadth, and until measurements of the head embrace space of three dimensions, they can afford us but little information.

IV.—CHEST MEASUREMENT.

The extremes were 37½ inches and 26 inches. The larger measurement was given by the possessor of the largest head circumference (D. above). The following are the complete measurements of the three possessors of the smallest chests :

	Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
F.....	6 st. 6¼ lbs.	4 ft. 9¾ in	20½ in	26 in	7¾ in	11½ in	13½ years.
G.....	6 „ 0¼ „	4 „ 9 „	21¼ „	26 „	8¼ „	11½ „	13 „
H.....	4 „ 12 „	4 „ 6¼ „	20 „	26 „	6¼ „	9¾ „	12½ „

V.—ARM MEASUREMENT.

The extremes were $11\frac{7}{8}$ inches and $16\frac{1}{2}$ inches. The smaller measurement belonged to the possessor of the least weight and height (B. above, pp. 127, 129). The other gave the following measurements:

	Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
I.....	10 st. $7\frac{1}{2}$ lbs	5 ft. $4\frac{7}{8}$ in	$22\frac{1}{2}$ in	34 in	$11\frac{1}{2}$ in	$14\frac{1}{2}$ in	19 years.

He is one of the strongest and most muscular boys in the school.

VI.—LEG MEASUREMENT.

The extremes were $16\frac{1}{4}$ inches and $9\frac{3}{4}$ inches, and the complete measurements are as follows:

	Weight.	Height.	Head.	Chest.	Arm.	Leg.	Age.
K.....	11 st. 4 lbs	5 ft. $6\frac{1}{2}$ in	$22\frac{3}{4}$ in	$35\frac{1}{2}$ in	$11\frac{1}{2}$ in	$16\frac{1}{4}$ in	$18\frac{1}{2}$ years.
L.....	5 „ 5 „	4 „ $6\frac{1}{4}$ „	$21\frac{1}{4}$ „	$27\frac{1}{2}$ „	7 „	$9\frac{3}{4}$ „	11 „

H. (*vide* Table IV, above), also gave a leg-circumference of $9\frac{3}{4}$ inches.

NOTES on the MARLBOROUGH SCHOOL STATISTICS. By FRANCIS GALTON, F.R.S.

It will be in the recollection of many in this room, that a few months ago I applied with success to the Anthropological Institute, to enlist their co-operation in obtaining statistical information from large schools. I showed that it appeared feasible to obtain in that way information for the purpose of intercomparison, on the growth of Englishmen living under different conditions of town and country, and belonging to different ranks of society. I explained that the boys at each school were of fairly homogeneous origin, and that, being under the control of highly intelligent masters, it would be practicable in many instances to obtain classified returns of large numbers of heights and weights which we might discuss and combine with comparatively little labour into appropriate groups, the publication of which would be found to be exceedingly valuable contributions to anthropological statistics.

Much time was necessarily lost in preparing the blank schedules, and in making other prefatory arrangements; at length a few applications were issued, but only a few, in order that our earlier experience might correct or reassure us before we were finally compromised to a definite form of action. The first reply

that was received came from Marlborough College, a great school of 540 boys, now presided over by a distinguished scholar, Dr. Farrar, honourably known to the scientific world by his early and outspoken advocacy of the introduction of science teaching into schools. The gentlemen who actually carried out the work were Dr. Fergus, Medical Officer of the College, who has had considerable experience in statistics, and Mr. Rodwell, the natural science master. Their returns are additionally valuable from the fact that they include many statistical inquiries besides those of age, height, and weight, which we had confined ourselves to asking for. We have also received a return from Liverpool College, containing 650 boys, promises from other schools, and hopes of co-operation from many. It would be premature to rely on general results derived from the data furnished by either of these two colleges, but I considered it would be well to do two things, at once. The one was, to ask Mr. Rodwell and Dr. Fergus to furnish an account of the way in which they had so successfully conducted their measurements, accompanied by such general remarks as they might think fit to make—this forms the subject of the preceding memoir; and the other was, roughly to work out by myself some of the published Marlborough results, in order to show in a general way how I proposed hereafter to treat the larger map of materials, and thus to invite criticism and helpful suggestions at the outset. It should, however, be repeated here, that in inviting schools to send in returns we do not propose to publish those returns separately but in groups. I will confine what I am about to say to height.

The returns are furnished, as asked for, in a crude shape. They tell us that there were 540 boys at the school, of whom 103 were 16 on their last birthday, 140 were 15, 90 were 14, and 96 were 13; these groups are sufficiently numerous to give approximate results. Again, the returns tell us, in each of these groups, how many boys there were between 5 feet 1 inch and 5 feet 2 inches, between 5 feet 2 inches and 5 feet 3 inches, and so on throughout the whole range of measurement. These are the crude statistics on which I have worked as follows:—

1. I obtained the mean height for each age, and examined the run of those figures. By the law of continuity we have every right to expect the mean growth to be regular, and therefore that a line through the tops of a series of ordinates representing the mean heights should form some regular curve. If it forms a broken line we may be sure that there is error in our way of collecting the facts. In the Marlborough statistics the line is fairly regular, so much so, as to enable us to guess what the curve would have become if we had dealt with more cases. It must be recollected that we are in a much better position

than if we were dealing with isolated groups of 103, 140, 90, and 96 boys respectively, as will be very clearly seen as we proceed.

2. I reduced the groups severally to the same proportions, supposing them in each case to have consisted of 100 boys, and examined the run of the figures, and compared them with a series calculated according to the "law of frequency of error", adopting such constants as appeared in each case most conformable to fact. The following table shows the result.

Number of boys of different degrees of height, at the several years of their ages.

Height in inches.		AGE LAST BIRTHDAY.									
Limits.	Mean.	12		13		14		15		16	
		obs.	cal.	obs.	cal.	obs.	cal.	obs.	cal.	obs.	cal.
Above 71 inches ...	72 $\frac{1}{2}$	...	...	...	...	...	...	2	2	3	4
68 to 71 " ...	68 $\frac{1}{2}$	...	...	...	...	3	4	2	2	11	17
65 " 68 " ...	66 $\frac{1}{2}$	...	...	1	6	22	14	22	18	39	32
62 " 65 " ...	63 $\frac{1}{2}$	12	6	36	32	35	38	35	40	34	31
59 " 62 " ...	61 $\frac{1}{2}$	32	34	33	46	30	30	30	31	8	12
56 " 59 " ...	57 $\frac{1}{2}$	41	45	25	15	8	9	10	8	5	4
53 " 56 " ...	54 $\frac{1}{2}$	15	14	...	1	2	1	1	1	...	...

It will be seen that the returns corresponding to the ages of 16, 15, and 14, derived from 103, 140, and 90 cases respectively, conform very fairly to the law, those for 12 happen to do so, but as there are only 37 cases under this head I cannot place much reliance on the result—it may be a mere accident. Those for 13 are irregular, although based on 96 cases (and so were those for 17, but these are only 47 in number). Taking the table as a whole, I think we are justified in saying that the "law of frequency of error" is fairly applicable, and in adopting it, although we do some violence to the figures corresponding to the age of 13.

I have said that in these calculations I adopted the constants that appeared most conformable to fact. The way of proceeding was as follows. First, I treated each group separately in the usual way, as is popularly described in Quetelet's "Letters" and largely illustrated in Gould's "Statistics of the late American War", not to mention other more learned books. This gave a series of constants for each group, each forming continuous curves. Now the *successive groups* ought also, according to what was pointed out in the preceding paragraph, to form a continuous series. The continuity should exist in "file" as well as in "rank", the whole surface should be regular; I,

therefore, slightly corrected the constants until they fulfilled these conditions, and from the constants so revised calculated the series which I have given.

The whole law of growth now starts into life, by giving a small table as below.

TABLE II.

AGE (actual, not last } Birthday) }	12½	13½	14½	15½	16½	etc.
Mean height, in inches ...	56½	58½	60½	63½	65½	etc.
Probable error, in inches	1½	1½	1½	1½	2¼	etc.

The percentage of boys of any age within the limits of the table, who will be found between any specified degrees of height, can at once be ascertained from these few figures by reference to an ordinary Table of Frequency of Error, and by a simple and immediate arithmetical process. Nay, further, the relation between age, mean height, and probable error, is undoubtedly to be expressed approximately by some empirical formula, so that the whole history of the human growth of men who passed through the stage of Marlborough boyhood could be given by half a dozen letters.

So far as the law of Frequency of Error does not strictly apply, to that degree will the conclusions be faulty; this difficulty is to be removed by seeking for groups of a still more homogeneous character than is afforded by the mere fact of being a Marlborough boy, in order that individual differences should depend, as far as may be, upon different combinations of a multitude of small, variable causes, and as little as possible upon occasional great influences, such as wide differences of race and nurture. Again, so far as the constants are insufficiently exact, to that degree also will the conclusions be faulty. The check to this is afforded by deriving them from a larger collection of facts than we have now before us.

I will give the results in a graphic form, because the eye is a critical judge of truth in outline, and the reasonableness of the results will become the more apparent when they are displayed in a pictorial form; besides, the procedure will be made more intelligible.

In the diagram, the curved spaces are supposed to be seen in perspective, and to be imagined as standing out at right angles to the plane of the paper. They are not unlike the partitions in some railway carriages, which separate the head of the occupant of the middle seat from those of his neighbours on either side.

The partition to the left of any one of the columns, say of that under the age of 14, is a record of the heights of all the boys of that age. The principle is as follows:—these boys are supposed to be divided into sets, corresponding to the entries in Table I, namely, one set of boys between 68 and 71 inches in height, whose mean height may be taken as $69\frac{1}{2}$ inches (though this is not strictly correct), and a line is drawn on the partition at $69\frac{1}{2}$ inches from the ground, of a length proportionate to the number of boys in that set, which the table shows to be 4. Similarly, at $66\frac{1}{2}$ inches from the ground, a line representing 18 is drawn; at $63\frac{1}{2}$, 38, and so on. Then the tops of these lines are joined with a free hand, by which the well-known outline of the curve of “frequency of error” becomes apparent, and we obtain a figure which is true for any number of cases, and for any subdivisions of them, however minute. For example, if we wished to know out of 10,000 such boys, how many there were of heights ranging between, say $58\frac{1}{4}$ and $58\frac{3}{4}$ inches, then the ratio of the area included between the lines at those heights, as compared to the total area of the figure, taken as 10,000, would give the answer.

I have drawn similar figures in the diagram for each of the 5 years from 12 to 16 inclusive, and the successive ranks of the figures, estimated “in file”, shows very distinctly to the eye the character of the law of growth. We see how the variation widens as the age increases, by the outlines being, so to speak, more mountainous in the earlier columns, and forming broader hills in the later, the sectional area in all cases being strictly the same.

It is to be observed that the arithmetical mean of the heights indicated by an X in the diagram, does not strictly correspond with the typical means indicated by an O, but is in all cases somewhat higher. I ascribe this partly to the fact of exceptionally tall boys being not uncommon—in other words to the law of frequency of error not being strictly applicable. Probably the best approximation to the mean value is obtained by drawing a line with a free hand through the X and O of each column, and this is a finally corrected estimate, which I have adopted in Table II.

No one can be more conscious than myself that these Marlborough returns have been thus subjected to more elaborate statistical treatment than the number of cases which they contain would, in ordinary circumstances, warrant. The conclusions are based on a somewhat strained hypothesis, by substituting the figures in the second halves of the columns in Table I for those in the first half, from which they differ in some cases notably. The results are, therefore, to be trusted, only so far as

being near the truth, and certainly nearer the truth than any other result that can be specified. They, however, teach us that it would not require more than the combination of a few schools of the same class to give very excellent results. I believe, judging from the run of the figures, that when we have returns from 4 or 5 schools of equal size to Marlborough, containing boys of the same classes of society, and antecedents generally, that we shall have sufficient material to enable us to establish with certainty the law of growth of the English boys of the present date, who are sons of professional men and clergymen, and who are educated in the country, and reared on the present system of diet and physical and mental work. This will be a standard of comparison for future periods, and also for other countries and to different conditions of life, and is therefore an anthropological constant of sterling value. Liverpool College belongs to another category, namely, to boys educated in towns. The statistics came out very differently, so that it would have been impossible to combine them with those of Marlborough.

I now conclude my remarks, which have been made solely with the view of showing how it appears to me that the school statistics can be dealt with most suitably, and how the trouble to which we ask the school authorities to put themselves will not be labour thrown away.

DISCUSSION.

Sir DUNCAN GIBB commented upon the great value of the author's investigations, and threw out the suggestion that the spirometer should be used to estimate the chest capacity of the boys, which would add greatly to the importance of the general results. He would also suggest that the colour of the hair and eyes should be mentioned. Some years ago he himself had examined a number of persons amongst the out-patients of Westminster Hospital, to assist his friend, Dr. John Beddoe, in some inquiries into the stature and bulk of the men of the British Islands; and all these points were carefully attended to, thus adding to the importance of the general subject. The value of the spirometer could not be overrated, for it is a more reliable test of strength and chest capacity than any measurements round the body, and no doubt, eventually, the medical officers of the army would find it of great assistance in testing the powers of recruits.

Mr. HYDE CLARKE, Col. FOX, and the PRESIDENT also offered a few remarks.

In the absence of the Director, Mr. Rudler read the following paper for the author :

On the EXCESS of FEMALES in the WEST INDIAN ISLANDS, from documents communicated to the Anthropological Institute by the Colonial Office. By FRANCIS GALTON, F.R.S.

A CIRCULAR was lately sent from the Colonial Office to the several governors of the West Indian colonies, desiring information on the causes of the excess of females that had been noticed in some of them. The replies have been very obligingly communicated to the Anthropological Institute, and have since been handed to me for examination ; hence the following remarks.

The population of the several West Indian Islands live under various and continually varying social conditions, but they are characterised, with one exception, by an unusual excess of females. The cause of this does not reside in any peculiarity of the birth-rate ; it is partly accounted for by an unusually large mortality among the male children, but appears to be principally due to emigration of the male adults. The annexed table shows the proportion between the sexes at the present time, and the ratio of male to female births.

TOTAL POPULATION.				BIRTHS.			
	Males.	Females	No. of F. to 100 M.	No. of Years.	Males.	Females	No. of F. to 100 M.
Bermuda	5102	6619	122	5	1190	1173	98
Virgin Islands...	3379	3272	97	10	1106	992	90
Montserrat	not	stated	—	5	838	877	105
Antigua	not	stated	—	5	3863	3724	96
Grenada	18280	19404	106	5	3804	3697	97
St. Lucia	not	stated	—	3	2164	2102	97
St. Vincent	16865	18823	111	5	4197	4080	97
Barbadoes	73452	88590	120	all child. un 1 yr.	2898	2857	99

The last column shows that the male births are here, as is commonly the case everywhere, in excess. Montserrat is exceptional, but its population is so small that casual circumstances may account for its peculiarity, especially as it appears that the male births predominated in two out of the five years.

Bermuda affords a striking example of the variety of conditions which affect the same island at different periods of its history, and different islands at the same periods. In 1830, there were in Bermuda 106 females to every 100 males ; in 1833, about the period of the slave emancipation, there were 120 ; and in 1840, 134. Since that time, the numbers have be-

come less unequal ; in one year there was a temporary increase of shipping business, emigration was checked, and the ratio fell to 116. Of later years the white male adults have been addicted to quitting the island altogether, and settling in America ; consequently, the excess of females is very strongly marked among the white people. The Virgin Islands afford another instance of special conditions ; they are, also, the only colonies in which the males predominate, and where there is a deficiency of females of marriageable age. This peculiarity is accounted for by a steady drain of the girls, for the purpose of prostitution, to St. Thomas's, where they die of disease, or whence they do not return to their birthplace until they are old women. Every island appears to have its own anomalies, which have differed at every stage of its history.

The mortality of male children is exceptionally great, but it does not appear from these returns why they should be so much more difficult to rear in childhood than those of the other sex. A suggestion of the possibility of there being a custom of male infanticide is satisfactorily negatived. In boyhood and youth the case is different to what it was in childhood ; dissipation of all kinds acts more fatally upon boys than on girls, because they have the stronger passions and are less under restraint. Thus, the Administrator of Sta. Lucia writes, "Immediately after the age of infancy, while girls are commonly kept closely under the eye of their mother, boys are allowed a liberty comparatively uncontrolled, and may frequently be seen smoking strong tobacco and drinking new rum."

However, the chief cause of the deficiency of males is attributed with great confidence by many of the governors to the direct action of emigration. The facts from Bermuda have already been given ; those from Barbadoes may be added. In the years 1864-5, a sudden increase of emigration took place from Barbadoes to British Guiana, and no less than 6,779 persons emigrated in those two years ; their sex and age is not specified, but undoubtedly a very large proportion of them must have been male adults.

I would remark, in conclusion, that the population of the West Indian Islands being subject to a variety of large and discontinuous influences, do not afford a suitable field for ordinary statistical inquiries. On the other hand, they present a most instructive aggregate of strongly-marked social experiments, each of which well deserves the pains of a separate and thorough investigation.

Mr. Galton then read the following paper by the Rev. H. W. Watson and himself:

On the PROBABILITY of the EXTINCTION of FAMILIES. By the Rev. H. W. WATSON. With PREFATORY REMARKS, by FRANCIS GALTON, F.R.S.

THE decay of the families of men who occupied conspicuous positions in past times has been a subject of frequent remark, and has given rise to various conjectures. It is not only the families of men of genius or those of the aristocracy who tend to perish, but it is those of all with whom history deals, in any way, even of such men as the burgesses of towns, concerning whom Mr. Doubleday has inquired and written. The instances are very numerous in which surnames that were once common have since become scarce or have wholly disappeared. The tendency is universal, and, in explanation of it, the conclusion has been hastily drawn that a rise in physical comfort and intellectual capacity is necessarily accompanied by diminution in "fertility"—using that phrase in its widest sense and reckoning abstinence from marriage as sterility. If that conclusion be true, our population is chiefly maintained though the "proletariat," and thus a large element of degradation is inseparably connected with those other elements which tend to ameliorate the race. On the other hand, M. Alphonse De Candolle has directed attention to the fact that, by the ordinary law of chances, a large proportion of families are continually dying out, and it evidently follows that, until we know what that proportion is, we cannot estimate whether any observed diminution of surnames among the families whose history we can trace, is or is not a sign of their diminished "fertility." I give extracts from M. De Candolle's work in a foot-note,* and may add that, although I have not hitherto published anything on the matter, I took considerable pains some years ago to obtain numerical results in respect to this very problem. I made certain very simple, but not very inaccurate, suppositions, concerning average fertility, and I worked to the nearest integer, starting with 10,000 persons, but the computation became intolerably tedious after a few steps, and I had to abandon it. More recently, having first privately applied in vain to some

* "Au milieu des renseignements précis et des opinions très-sensées de MM. Benoiston de Châteauneuf, Galton, et autres statisticiens, je n'ai pas rencontré la réflexion bien importante qu'ils auraient dû faire de l'extinction *inévitabile* des noms de famille. Évidemment tous les noms doivent s'éteindre Un mathématicien pourrait calculer comment la réduction des noms ou titres aurait lieu, d'après la probabilité des naissances toutes féminines ou toutes masculines ou mêlées et la probabilité d'absence de naissances dans un couple quelconque." etc—Alphonse de Candolle, "Histoire des Sciences et des Savants," 1873.

mathematicians, I put the problem into a shape suited to mathematical treatment, and proposed it in the pages of a well-known mathematical periodical of a high class, the "Educational Times." It met with poor success at first, because the answer it received was from a correspondent who wholly failed to perceive its intricacy, and his results were totally erroneous. My friend the Rev. H. W. Watson then kindly, at my request, took the problem in hand, and published his first results in the above-mentioned periodical. These have since been considerably extended, and form the subject of the following paper. They do not give what can properly be called a general solution, but they do give certain general results. They show (1) how to compute, though with great labour, any special case; (2) a remarkably easy way of computing those special cases in which the law of fertility approximates to a certain specified form; and (3), how all surnames tend to disappear. I therefore feel sure that Mr. Watson's memoir will be of interest to the Anthropological Institute, and I beg to submit it to their notice, both for its intrinsic value and in hopes that other mathematicians may pursue the inquiry and attain still nearer to a complete solution of this very important problem.

The form in which I originally stated the problem is as follows. I purposely limited it in the hope that its solution might be more practicable if unnecessary generalities were excluded:—

A large nation, of whom we will only concern ourselves with the adult males, N in number, and who each bear separate surnames, colonise a district. Their law of population is such that, in each generation, a_0 per cent. of the adult males have no male children who reach adult life; a_1 have one such male child; a_2 have two; and so on up to a_5 who have five. Find (1) what proportion of the surnames will have become extinct after r generations; and (2) how many instances there will be of the same surname being held by m persons.

Discussion of the problem by the Rev. H. W. WATSON.

Suppose that at any instant all the adult males of a large nation have different surnames, it is required to find how many of these surnames will have disappeared in a given number of generations upon any hypothesis, to be determined by statistical investigations, of the law of male population.

Let, therefore, a_0 be the percentage of males in any generation who have no sons reaching adult life, let a_1 be the percentage that have one such son, a_2 the percentage that have two, and so on up to a_q , the percentage that have q such sons, q being so large that it is not worth while to consider the chance of any man having more than q

adult sons—our first hypothesis will be that the numbers a_0, a_1, a_2 , etc., remain the same in each succeeding generation. We shall also, in what follows, neglect the overlapping of generations—that is to say, we shall treat the problem as if all the sons born to any man in any generation came into being at one birth, and as if every man's sons were born and died at the same time. Of course it cannot be asserted that these assumptions are correct. Very probably accurate statistics would discover variations in the values of a_0, a_1 , etc., as the nation progressed or retrograded; but it is not at all likely that this variation is so rapid as seriously to vitiate any general conclusions arrived at on the assumption of the values remaining the same through many successive generations. It is obvious also that the generations must overlap, and the neglect to take account of this fact is equivalent to saying, that at any given time we leave out of consideration those male descendants of any original ancestor who are more than a certain average number of generations removed from him, and compensate for this by giving credit for such male descendants, not yet come into being, as are not more than that same average number of generations removed from the original ancestors.

Let then $\frac{a_0}{100}, \frac{a_1}{100}, \frac{a_2}{100}$, etc., up to $\frac{a_q}{100}$, be denoted by the sym-

bols t_0, t_1, t_2 , etc., up to t_q , in other words, let t_0, t_1 , etc., be the chances in the first and each succeeding generation of any individual man, in any generation, having no son, one son, two sons, and so on, who reach adult life. Let N be the original number of distinct surnames, and let m_r be the fraction of N which indicates the number of such surnames with s representatives in the r th generation.

Now, if any surname have p representatives in any generation, it follows from the ordinary theory of chances that the chance of that same surname having s representatives in the next succeeding generation is the coefficient of x^s in the expansion of the multinomial

$$(t_0 + t_1x + t_2x^2 + \text{etc.} + t_qx^q)^p$$

Let then the expression $t_0 + t_1x + t_2x^2 + \text{etc.} + t_qx^q$ be represented by the symbol T .

Then since, by the assumption already made, the number of surnames with no representative in the r -lth generation is ${}_{r-1}m_0 N$, the number with one representative ${}_{r-1}m_1 N$, the number with two ${}_{r-1}m_2 N$ and so on, it follows, from what we last stated, that the number of surnames with s representatives in the r th generation must be the coefficient of x^s in the expression

$$\{ {}_{r-1}m_0 + {}_{r-1}m_1 T + {}_{r-1}m_2 T^2 + \text{etc.} + {}_{r-1}m_{q^{r-1}} T^{q^{r-1}} \} N$$

If, therefore, the coefficient of N in this expression be denoted by $f_r(x)$ it follows that ${}_{r-1}m_1, {}_{r-1}m_2$ and so on, are the coefficients of x, x^2 and so on, in the expression $f_{r-1}(x)$.

If, therefore, a series of functions be found such that

$$f_1(x) = t_0 + t_1x + \text{etc.} + t_qx^q \text{ and } f_r(x) = f_{r-1}(t_0 + t_1x \text{ etc.} + t_qx^q)$$

then the proportional number of groups of surnames with s representatives in the r th generation will be the coefficient of x^s in $f_r(x)$ and the actual number of such surnames will be found by multiplying this coefficient by N . The number of surnames unrepresented or become extinct in the r th generation will be found by multiplying the term independent of x in $f_r(x)$ by the number N .

The determination, therefore, of the rapidity of extinction of surnames, when the statistical data, t_0, t_1 , etc., are given, is reduced to the mechanical, but generally laborious process of successive substitution of $t_0 + t_1x + t_2x^2 + \text{etc.}$, for x in successively determined values of $f_r(x)$, and no further progress can be made with the problem until these statistical data are fixed; the following illustrations of the application of our formula are, however, not without interest.

(1) The very simplest case by which the formula can be illustrated is when $q=2$ and t_0, t_1, t_2 are each equal to $\frac{1}{3}$.

$$\text{Here } f_1(x) = \frac{1+x+x^2}{3} \quad f_2(x) = \frac{1}{3} \left\{ 1 + \frac{1}{3}(1+x+x^2) + \frac{1}{9}(1+x+x^2)^2 \right\}^2$$

and so on.

Making the successive substitutions, we obtain

$$f_2(x) = \frac{1}{3} \left\{ \frac{13}{9} + \frac{5x}{9} + \frac{6x^2}{9} + \frac{2x}{9} + \frac{x^2}{9} \right\}^2$$

$$f_3(x) = \frac{1249}{2187} + \frac{265x}{2187} + \frac{343x^2}{2187} + \frac{166x^3}{2187} + \frac{109x^4}{2187} + \frac{34x^5}{2187} + \frac{16x^6}{2187} + \frac{4x^7}{2187} + \frac{x^8}{2187}$$

$$f_4(x) = \cdot 63183 + \cdot 08306x + \cdot 10635x^2 + \cdot 07804x^3 + \cdot 06487x^4 + \cdot 05443x^5 + \cdot 01437x^6$$

$$+ \cdot 01692x^7 + \cdot 01144x^8 + \cdot 00367x^9 + \cdot 00104x^{10} + \cdot 00015x^{11} + \cdot 00005x^{12}$$

$$+ \cdot 00001x^{13} + \cdot 00000x^{14} + \cdot 00000x^{15} + \cdot 00000x^{16}$$

and the constant term in $f_5(x)$ or ${}_5m_0$ is therefore

$$\cdot 63183 + \frac{\cdot 08306}{3} + \frac{\cdot 10635}{9} + \frac{\cdot 07804}{27} + \frac{\cdot 06487}{81} + \frac{\cdot 05443}{243} + \frac{\cdot 01437}{729} + \frac{\cdot 01692}{2187} + \frac{\cdot 01144}{6561}$$

$$+ \frac{\cdot 00367}{19683} + \frac{\cdot 00104}{58049} + \frac{\cdot 00015}{177147} +$$

The value of which to five places of decimals is $\cdot 67528$.

The constant terms, therefore in f_1, f_2 up to f_5 when reduced to decimals, are in this case $\cdot 33333, \cdot 48148, \cdot 57110, \cdot 64113$, and $\cdot 65628$ respectively. That is to say, out of a million surnames at starting, there have disappeared in the course of one, two, etc., up to five generations, 333333, 481480, 571100, 641130, and 675280 respectively.

The disappearances are much more rapid in the earlier than in the later generations. Three hundred thousand disappear in the first generation, one hundred and fifty thousand more in the second, and so on, while in passing from the fourth to the fifth, not more than thirty thousand surnames disappear.

All this time the male population remains constant. For it is evident that the male population of any generation is to be found by

multiplying that of the preceding generation, by $t_1 + 2t_2$, and this quantity is in the present case equal to one.

If axes Ox and Oy be drawn, and equal distances along Ox represent generations from starting, while two distances are marked along every ordinate, the one representing the total male population in any generation, and the other the number of remaining surnames in that generation, of the two curves passing through the extremities of these ordinates, the *population* curve will, in this case, be a straight line parallel to Ox , while the *surname* curve will intersect the population curve on the axis of y , will proceed always convex to the axis of x , and will have the positive part of that axis for an asymptote.

The case just discussed illustrates the use to be made of the general formula, as well as the labour of successive substitutions, when the expressions $f_1(x)$ does not follow some assigned law. The calculation may be infinitely simplified when such a law can be found; especially if that law be the expansion of a binomial, and only the extinctions are required.

For example, suppose that the terms of the expression $t_0 + t_1x + \&c. + t_qx^q$ are proportional to the terms of the expanded binomial

$(a + bx)^q$ i. e., suppose that $t_0 = \frac{a^q}{(a+b)^q}$ $t_1 = q \frac{a^{q-1}b}{(a+b)^q}$ and so on.

$$\text{Here } f_1(x) = \frac{(a+bx)^q}{(a+b)^q} \text{ and } {}_1m_0 = \frac{a^q}{(a+b)^q}$$

$$f_2(x) = \frac{1}{(a+b)^q} \left\{ a + b \frac{(a+bx)^q}{(a+b)^q} \right\}^q$$

$${}_2m_0 = \frac{1}{(a+b)^q} \left\{ a + b {}_1m_0 \right\}^q$$

$$\text{Generally } {}_rm_0 = \frac{1}{(a+b)^q} \left\{ a + b {}_{r-1}m_0 \right\}^q = \frac{b^q}{(a+b)^q} \left\{ \frac{a}{b} + {}_{r-1}m_0 \right\}^q$$

If, therefore, we wish to find the number of extinctions in any generation, we have only to take the number in the preceding generation, add it to the constant fraction $\frac{a}{b}$, raise the sum to the power of q , and multiply by $\frac{b^q}{(a+b)^q}$

With the aid of a table of logarithms, all this may be effected for a great number of generations in a very few minutes. It is by no means unlikely that when the true statistical data t_0 , t_1 , etc., t_q are ascertained, values of a , b , and q may be found, which shall render the terms of the expansion $(a+bx)^q$ approximately proportionate to the terms of $f_1(x)$. If this can be done, we may *approximate* to the determination of the rapidity of extinction with very great ease, for any number of generations, however great.

For example, it does not seem very unlikely that the value of q might be 5, while t_0 , $t_1 \dots t_q$ might be .237, .396, .264, .088, .014, .001, or nearly, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2^4}$, $\frac{1}{2^3}$, $\frac{1}{1^4}$, and $\frac{1}{1000}$.

Should that be the case, we have $f_1(x) = \frac{(3+x)^3}{4^3}$ ${}_1m_0 = \frac{3^3}{4^3}$

and generally ${}_rm_0 = \frac{1}{4^5} \left\{ 3 + {}_{r-1}m_0 \right\}^5$

Thus we easily get for the number of extinctions in the first ten generations respectively

·237, ·346, ·410, ·450, ·477, ·496, ·510, ·520, ·527, ·533

We observe the same law noticed above in the case of $\frac{1+x+x^2}{3}$

viz., that while 237 names out of a thousand disappear in the first step, and an additional 109 names in the second step, there are only 27 disappearances in the fifth step, and only 6 disappearances in the tenth step.

If the curves of surnames and of population were drawn from this case, the former would resemble the corresponding curve in the case last mentioned, while the latter would be a curve whose distance from the axis of x increased indefinitely, inasmuch as the expression

$$t_1 + 2t_2 + 3t_3 + 4t_4 + 5t_5$$

is greater than one.

Whenever $f_1(x)$ can be represented by a binomial, as above suggested, we get the equation

$${}_rm_0 = \frac{1}{(a+b)^q} \left\{ a + b {}_{r-1}m \right\}^q$$

whence it follows that as r increases indefinitely the value of ${}_rm_0$ approaches indefinitely to the value y where

$$y = \frac{1}{(a+b)} \left\{ a + by \right\}$$

that is where $y = 1$.

All the surnames, therefore, tend to extinction in an indefinite time, and this result might have been anticipated generally, for a surname once lost can never be recovered, and there is an additional chance of loss in every successive generation. This result must not be confounded with that of the extinction of the male population; for in every binomial case where q is greater than 2, we have $t_1 + 2t_2 + \&c. + qt_q > 1$, and, therefore an indefinite increase of male population.

The true interpretation is that each of the quantities, ${}_rm_1$, ${}_rm_2$, &c., tends to become zero, as r is indefinitely increased, but that it does not follow that the product of each by the infinitely large number N is also zero.

As, therefore, time proceeds indefinitely, the number of surnames extinguished becomes a number of the *same order of magnitude* as the total number at first starting in N , while the number of surnames

represented by one, two, three, etc., representatives is some infinitely smaller but finite number. When the finite numbers are multiplied by the corresponding number of representatives, sometimes infinite in number, and the products added together, the sum will generally exceed the original number N . In point of fact, just as in the cases calculated above to five generations, we had a continual, and indeed at first, a rapid extinction of surnames, combined in the one case with a stationary, and in the other case an increasing population, so is it when the number of generations is increased indefinitely. We have a continual extinction of surnames going on, combined with constancy, or increase of population, as the case may be, until at length the number of surnames remaining is absolutely insensible, as compared with the number at starting; but the total number of representatives of those remaining surnames is infinitely greater than the original number.

We are not in a position to assert from *actual calculation* that a corresponding result is true for every form of $f_1(x)$, but the reasonable inference is that such is the case, seeing that it holds whenever

$f_1(x)$ may be compared with $\frac{(a+bx)_q}{(a+b)^q}$ whatever a , b , or q may be.

On the RUDE STONE MONUMENTS of CERTAIN NAGA TRIBES, with some REMARKS on their CUSTOMS, etc. By Major H. H. GODWIN-AUSTEN, F.R.G.S., F.Z.S., etc., Deputy Superintendent Topographical Survey of India. [With Plates xi and xii.]

ON visiting the Nágá Hills District last cold weather, 1872-73, I was very much surprised and interested to find that some of the tribes Anghámi and others erect upright cenotaphs, similar to those to be seen in the Khási Hills, and which I described when last in England in a paper read before this Institute in May 1871, and published in the Journal. The custom is here in full force, not, as is the case among the Khasis, undoubtedly fast dying out. The interest attached to this custom was not a little increased when I came on the first monoliths by my never having read of any notice of it in any work or report in which the Nágá tribes are mentioned. Colonel Butler, in his book, does not allude to this very remarkable custom, and Colonel Dalton is equally silent in his much later published work, "Descriptive Ethnology of Bengal." Not only are monolithic monuments common, but the Dolmen form is also to be seen in villages at the head of the Zúllo and Sijjo valleys. I first observed these stones on approaching the village of Kheruphima, set up on the roadside, often singly, in twos and threes, sometimes in sets of as many as

eight and nine. In the drawing (Plate xi), it will be seen that their arrangement is quite different to the Khási stones, and that they are placed, gradually decreasing in size, from left to right. Their number may thus be either odd or even without disturbing the symmetry of the monument as a whole, which is not the case with the Khási stones, for these, with the highest in the centre, and one or more on either side, are always in uneven sets. Mr. C. B. Clarke, in a paper lately read before the Institute, disagrees with me on this point, but the case of even sets, owing to two stones of equal size being placed in the centre, is so very rare and exceptional that it rather, if anything, proves the rule.

The object for which they are set up by the Nágás is not, as it is with the Khási, one of propitiation to the manes of their ancestors. They are erected by individuals during their lifetime to commemorate the feast given on the occasion, and one or more persons may give this, and for each a stone is set up. The feasting lasts two or three days, and at its close the stone (or stones), having been selected, is dragged in, and set up, sometimes within the village, oftener on the side of one of the principal approaches to it.

In the Sopvomah group of villages, situated on a ridge of friable shales, these stones of the Tertiary sandstones had been brought out of the bed of the Sijjo below, some 2,000 feet, up a very steep slope, at great expenditure of time and tremendous labour.

I saw some upright stones quite twelve feet high, but they never attained the proportions of some in the Khási hills, where I know of one twenty-four feet in height. They are numerous in the villages of Marám, Sopvomah, Kidemah, Kohimah to Sikhami, and on the east side of the Sijjo valley, in the Kezakenomi group of villages. To the eastward of this, they are fewer in number and smaller, and at the head of the Lanier valley, as at Phúnggum and Prowi, they are similar to those seen in the Gáro country, only one and two feet high, yet still set up with some sort of regularity.

The dolmens in Sopvomah and Kezakenomi were very large; some, flat slabs wedged out of the well-stratified sandstone, others, irregular, weathered masses from the beds of the ravines on the hillside. As far as I could learn, they have no connection with funeral obsequies. The Nágás of this part—and, in fact, all I have met—bury their dead, and in these particular villages the body is placed within a square platform built up of stone, about three to four feet above the ground. Long lines of these, close together, and rising in steps, are to be seen, either, and very frequently, inside the village, or else just outside, and skirting the

road. Occasionally they stand quite alone (Plate xii, where give a drawing of such a Nágá grave).

But I must remind you I am writing of the Anghámi and cognate tribes, and do not refer to those on the west, the Kútcha or Arúng Nágá. The many Nágá tribes vary greatly one with the other, although evidently of one common origin, and the Kútcha Nágá is in dress and customs very different from even the Anghámi, who adjoins him on the east. Colonel Dalton, in his beautiful book, "*Descriptive Ethnology of Bengal*," in Section 7, page 42, has fallen into error by adopting an artificial separation of the Nágás east and west of the Doyang River, and I trust he will forgive my criticism. This has led to a terrible mixing together of such very different ingredients as the Nágá of Asalu, the Arúng, and the Anghámi, by quoting Major Stewart's (not Steward) really good account in the T. A. S. Bengal of the former tribe as the type of all living in his assumed geographical sub-province, while a well-marked section of the Nágá race, those in the Mikir Hills, the Reugmah Nágá, are not alluded to at all. These last are undoubtedly emigrants from Lotha Nágás, east of the Doyang. Summing up at the end of this section—which, it is to be regretted, is all misleading—Colonel Dalton, still taking the Doyang as his boundary, decides that the Nágá on the west is allied to the Muni-puri (a decidedly mixed race—in truth, no race at all), and the Kukis and Nágás to the east to be "allied to the Singpho and other pagan tribes further east." Now, no Kuki tribe—not even one single village, is to be found to the east of the Doyang, or even so far north as its head waters—*i. e.*, north of the main watershed of the Irrawaddy and Brahmaputra, nor have they any connection with the far distant Singphos in either language, manners, or customs. The last paragraph of this section is to a certain extent contradictory to the preceding, where the Muni-puri and Kuki are supposed to be nearly allied. To a certain extent, the population of Muni-puri has mixed its blood with members of tribes to the south, but I should say—and I am supported by Colonel McCulloch*—was of Nágá origin. The true Kukis have only very recently—about 1840—come up from the southward, and they have only within the memory of the

* *Vide* "Account of the Valley of Muni-pore and the Hill Tribes," etc. By Major W. McCulloch, Political Agent at Muni-pur.—"*Records of the Government of India*," No. xxvii, 1859: "Their superstition too has preserved relics, which alone would have led to the suspicion of an originally close connection between them and the Nagas. The ceremony denominated 'Phumban Kaba,' or ascending the throne, is performed in Naga dress, both by the Raja and Ranee, and the 'Yim chan,' or great house, the original residence of the Meithei chief is, though he does not now reside in it, still kept up, and is made in the Naga fashion."

present generation become neighbours of the Nágá race on the Burrail range and in North-West Manipur. Both sections referring to the Nágás and Kukis have been written without sufficient personal knowledge of the people. One great point of dissimilarity between the Anghámi and Arúng is in their songs and dances. The really pretty active dances of the Arúng village maidens is never seen when in Anghámi and Nágá villages, and in the latter, singing is little heard, and when so is quite of a different kind. Other distinctions are observable in the form of their houses, in the arms they carry, and dress, particularly of the women, and mode of wearing the hair adopted by the unmarried girls. The Kútcha Nágá carries the shortest and lightest of spears of any of the hill people I have seen, and seldom, if ever, a shield.

ANGHAMI NAGA NUMERALS.

One ..	... Po	Sixteen ...	Kerr-o-súrá
Two...	... Kenna	Seventeen ...	Mekú-pomo-théná
Three	... Sé	Eighteen ...	Mekú-pomo-thethá
Four	... Dá	Nineteen ...	Mekú-pomo-thékú
Five...	... Péngú	Twenty	... Mekú
Six ...	... Súrá	Thirty	... Sèrr
Seven	... Théná	Forty	... Lhi-da
Eight	... Théthá	Fifty	... Lhi-péngú
Nine	... Thékú	Sixty	... Lhi-súrá
Ten ...	... Kerr	Seventy	... Lhi-théná
Eleven	... Kerr-o po	Eighty	... Lhi-thethá
Twelve	... Kerr-o-kéná	Ninety	... Lhi-thékú
Thirteen	... Kerr-o-sé	One hundred	Krá
Fourteen	... —		etc., etc.
Fifteen	... —		

Mr. A. W. FRANKS read a communication respecting the Congress of Anthropology and Prehistoric Archaeology, to be held at Stockholm, in August.

The meeting then separated.

MAY 26TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The Minutes of the previous meeting were confirmed.

GEORGE M. ATKINSON, Esq., 50, Walham Grove, Walham Green, S.W., was elected a member.

The following List of Presents was read, and the thanks of the meeting were voted for the same.

FOR THE LIBRARY.

From the EDITOR.—Cosmos di Guido Cora. Vol. ii, No. 1.

From the EDITOR.—*Revue Scientifique*, Nos. 46-7. 1874.

From the INSTITUTION.—*Journal of the Royal United Service Institution*. Vol. xvii. Appendix.

From the MANX SOCIETY.—*Manx Miscellanies*. Vol. xx. 1872.

From the ACADEMY.—*Bulletin de l'Académie Royale de Copenhague*. No. ii. 1873.

From the ANTHROPOLOGICAL SOCIETY OF SPAIN.—*Revista de Antropologia*. Vol. i, No. 4. 1874.

From the AUTHOR.—*Mémoire sur l'Asie Centrale, son Histoire et ses Populations*. By M. Girard de Rialle.

From the EDITOR.—*Nature* (to date).

Mr. J. Park Harrison exhibited drawings of crescentic shields from Etruria, Phrygia, and the Pacific; also cylindrical tiaras or hats from Sardinia, Western Asia, Solomon Islands, Easter Island, and Peru.

The author read the following paper:

RESEARCHES *in* PREHISTORIC *and* PROTOHISTORIC COMPARATIVE PHILOLOGY, MYTHOLOGY, *and* ARCHEOLOGY, *in* CONNECTION *with the* ORIGIN *of* CULTURE *in* AMERICA, *and its* PROPAGATION *by the* SUMERIAN *or* AKKAD FAMILIES. By HYDE CLARKE.

THE old Spanish conquerors of the New World saw with wonder the buildings of Mexico and Peru, the seats, even then, of ancient empire. The fall of the Montezumas and of the Incas was accompanied by that of the civilization, of which they were the leading representatives. The progress of the new ideas of religion and policy, together with the absorbing love of gold, rapidly outgrew and displaced the marvels of the ancient and strange regime, the less regarded because heathen.

The people, reduced to slavery, lost the practice of the higher arts, and while the palaces and temples went to ruin, or were buried under the thick growth of trees and creepers, no others were raised. The palaces of the viceroys and the churches of the missionaries were after foreign taste, and all tended to the forgetfulness of the ancient arts. Where there had been a conquering race in power, as that of the Incas, it was brought down to the same level of thralldom as its former subjects, the Aymaras, under the Spanish yoke, and all ambition and all stimulus to distinction were lost, as much as the power of bringing together thousands of labourers. As the languages were no longer written, except in catechisms, and the old hiero-

glyphics, quipus, were disused, after four centuries even the history that might have helped us has died off, leaving scanty and obscure remains.

The great buildings of Central and South America have been sufficiently described to be known to scholars, and their antique types have been the subject of much speculation during periods when the history of the human race, but ill-known now, was most imperfectly understood. According to the fancy of the writer, everything has been explained by reference to Egypt, to later India, or to China.

The gradual extension of exploration and settlement in the United States has, however, brought to light the fact that vast countries, which, for three hundred years at least, have been held by wandering savages, were occupied with monuments not less noteworthy and much more ancient than those to the south.

Step by step we have been brought to the conviction that the American continents have been held in times of yore by populations more or less forward, and in most cases more so than the present tribes, who have lost all knowledge of the monument builders, or attribute their works to races, which it can be ascertained, have no right to such a claim.

Strange as this state of things may seem, it can be understood with a little thought by what has happened in this island. When we dig down in the city some dozen or fifteen feet we come upon many remains of the Roman city, buried under layer and layer of house rubbish, garden mould, or the ashes of fires. Still deeper we reach bogs where are horns and bones belonging to a yet earlier time. (See Researches of Col. Lane Fox.) If we go abroad we see the hills topped with barrows, clad with thickets of trees, or bare and sharp, marking out their lines against the sky around us. In the west we see mounds of great stones, others in heaps built together, some balancing on peaks of rocks. We amused ourselves with calling these Druidic monuments, until we made out that we knew little about Druids, and that these great stone monuments were to be found in many lands beyond the reach of Druids or Celts.

Thus we learn how little we truly know of what has gone by in this island, of which we fill up every nook, and scan every yard of surface, nay turn over with spade or plough every foot of ground. We begin dimly to look back as it were on the torn-out leaves of a faded book, unknowing how to piece and patch together what should come first and what last, undoing now what seemed right yesterday, and by the help of some new found stray bit eking out a blank, or showing forth some awkward fault.

This is our state with all the help we can bring to bear, but,

in the hunting grounds of the west, the bloodthirsty savage still hovers, and neither what is above ground, nor what is below, can be carefully searched by the few explorers, and it is less to be wondered at that we know anything than that we know so little.

The slow bringing to light of so many records of the past gave rise to a crowd of speculations as to the mode in which America was peopled, and as to the races to which the several classes of monuments are to be awarded. Into these speculations it is of little good now to enter, as they are mostly built up without any fair ground, as the ignorance or dreaming of each man has prompted. There is no language which has not been said to have been found in America, as well Gaelic as Chinese or Japanese, which it is alleged has proved a ready means of converse.

Closely knit with the whole matter, however, is that question of the population of America, which has busied many men of learning during long time. This takes two shapes, the assumption that the Americas contain an inborn, indigenous or original population, the other that they were peopled from the old world.

It is a strange fancy with which the offspring of Europeans are seized to believe that everything in America is great and original, seeing that they themselves are strangers in the land, seeing too how much they are dependent on the horse, ox, and sheep brought in by their forefathers, and on the grain first sown by them. The Spanish-speaking Peruvian has some excuse for this, because most of his blood is Indian, but the people of New England or Virginia are without a drop or more than a drop of the blood of the Indians, with whom they never wedded, and whom they have driven off to die out in the wilderness. Still there is this fancy, and every American is ready to believe that there is something especially American in the blood of the Indians and in their speech, and these opinions react in Europe. There are distinct animals in the western world, the puma, the llama, the condor, the alligator, the rattlesnake, the timber is other than in the east, and why should not men be so too, and of other birth? It has been generally affirmed that there is a common likeness between all Indians, however far apart, and that there is an American grammar, which is said to be recognizable in every tongue, however unlike its roots may be, and America, it may be noted, is the land of a thousand tongues, which bar converse between tribe and tribe, many of them scanty in number, and shut up in narrow bounds. The explanation, however, is to be sought in epochs of grammar, that is, in prehistoric, and not in geographical limits.

If the population of America is of home growth and aboriginal, then its civilization must be either aboriginal or

imported from the east by a few people, wanderers, chiefs, or missionaries. We may at this point find standing ground. True it is, stray ships and canoes do drift across the Pacific, as they may have done over the Atlantic Ocean, but then the monuments in the south, and in the north more particularly, are so many and on such a scale that they are beyond such slender means, and show themselves as the work of great races.

Although some identifications have here been proposed, yet the great mass of the languages of America have been no more classified than are those of Africa and Caucasia. Everywhere we meet the same phenomena, better known to us in Caucasia, a number of dissimilar languages thrown together, but proceeding from dissimilar origins.

This is not peculiar to the Caucasus. We find it on the Nile, in West Africa, and in several regions of America. We do not, however, find in the New World such phenomena of wide-spread languages as in the Old World, the Chinese and the Indo-European. The only parallel we have is the Guarani branch of the Agaw in the Brazils, but the number is not comparable. A widespread language is the Malay. Next to this class is the extension of the Sumerian or Peru-Peguan.

It is, however, generally acknowledged that there is one language or race, that of the Eskimos, common to both worlds in the north of Asia and America. This is generally supposed to be that of the last comers, but it is quite within possibility that the race is very ancient, although it may have changed its language for that of a conqueror.

The Eskimo language may be regarded as among the most ancient known to us, and belongs to the groups of languages used by the short races, and of which one form is to be observed at the very other end of the Continent, in Tierra del Fuego. These again may be ascertained to be connected by various languages spoken by low populations in the Rocky Mountains, while others are to be noticed in the far east of Brazil on the Atlantic shore at Bahia.

These races, driven to the ends of the Continent and to headlands, as in the old world, are by language and by blood in some cases allied with that kind of Negritos or short races, of which the little men of the Minkopies in the Andamans, or of Bushmen in South Africa, afford a good type. These weak and low races, which may be called Pygmean, driven out by others stronger and perhaps more barbarous, in an early time covered both worlds. They only attest ancient occupation, and could not have supplied the monuments of any kind.

It is a singular thing that in one tribe of the Rocky Mountains, where the speech is akin to that of the short tribes, the

men are as tall as their neighbours, but their women are marked as being very short.

Sir John Lubbock (British Association, Liverpool, Sept. 1870) has even hinted at the possibility of races allied to the Esquimaux having existed in England, and this is in conformity with the phenomena of human migrations as illustrated by language. The languages of the Akka Pygmies of the Nile (Pygmies of Herodotus), and of the Obongo of Du Chaillu, appear to belong to some included in the Carib-Dahomey.

The Austral Pygmean includes the Andaman Minkopie of Tickell; the Muskogolge or Creek, the Natchez in North America; the Alikulip and Tekeenika of Tierra del Fuego. Some Tasmanian roots appear to belong to this.

The SEPTENTRIONAL PYGMEAN includes the Andaman Minkopie of Colebrooke; the Shoshoni, Utah, Comanch, Netela, Kij, etc., of North America; the Bayano and Darien of Central America; the Mayoruna, Kiriri, etc., of Brazil; the Dalla of Abyssinia; the Gonga languages, and probably the Wolof of West Africa; but of this further is said.

The POLAR PYGMEAN includes the Eskimo languages of America and Asia, and the Bushman of South Africa.

The Oonalashkan appears to be the link between the Eskimo and the Yeniseian. This latter class must be very early.

A remarkable exception to the languages of the short races is that of the Akka, already referred to.

The WOLOF has great affinities with the Pygmean. The people call themselves black. On the other side the Wolof appears to be in transition to Carib-Dahomey and to Vasco Kolarian.

A noticeable circumstance is that the Khond languages of Central India are allied to the Wolof, namely, the Gondi, Gayeti, Rutluk, Naikude, Kolami, Madi, Madia, Kuri, Keikadi, and Khond. These languages have been much affected by Dravidian.

The surroundings of this group are no less remarkable, being, except Savara (?), all African, namely, the Gadaba Agaw, and the Kolarian (Vasco-Kolarian) allied to the languages of West Africa, near the Wolof.

The SANDEH language is that of a remarkable people of the Nile region of the Nya Nya or Niam-Niam (Schweinfurth, *Linguistische Ergebnisse*). Notwithstanding the opinion of Livingstone, the people must be regarded as cannibals. Traces of their language exist in the Tasmanian and in the Sunda of Java, the Saru, the Guebesse, and the Isle of Pines. Its chief ally was Tasmanian. The numerals appear to be in series of right and left hands. There is no appearance of the negative series. In animal names there are conformities with the Bongo or Dor.

The Nya Nya people sharpen their teeth. Dr. A. B. Meyer, of Manila, in the course of a short visit, found skulls in the Philippines with the teeth so sharpened. This had been previously described by the old traveller Thévenot (*"Zeitschrift für Ethnologie,"* No. 6, 1873). It is to be remarked that the boomerang, as illustrated by Colonel Lane Fox, in contradistinction to Darwin (*"Desc. Man"* ch. v, p. 183), conforms to the line of the Sandeh influence.

With the PAPUAN and AUSTRALIAN classes, I am in no position to deal definitely, except to classify them as languages of great antiquity. In both, Pygmean and Sandeh influences are to be suspected.

The KAMCHATDALE and the Koriak appear to me to have ancient and wide relations. The Rodiya of Ceylon shows some resemblance.

There is a strange coincidence with the Thug dialect of India. Five in Koriak is myllangan (equivalent to hand). In Thug, molu is five, and gona is hand.

The GARO of India appears to constitute an early class. It has affinities to Yangaro of Gonga in North-East Africa, and perhaps to the Dulla. In North America it is, perhaps, represented by the Paduca. [See Akka.]

The SOUR of Savara in India I cannot define. It stands out very distinctly among the Non-Aryan languages.

The Thug and Bogwan dialects or jargons show some connection.

The YUMA of North-West America is a curious family. It includes Cuchana, Cocamaricopa, Dieguno, Mohave, Khwaklamayu, and Kulanapu. The latter and the Gallinero, as hereafter said, are reputed to have affinities to the Chinese. The Itonama of South America, and possibly the Oregones, are allied to the Yuma.

The LENCA languages of Honduras, the Guajiquiro, the Opatero and Intibuca appear to be connected with the Kouri, Koama, Legba, Bagbalan, Keamba, etc.

The CARIB-DAHOMÉY class includes two warlike and blood-thirsty divisions in Africa and America. In West Africa the Whydah, Dahomey, Adampi, Anfue, Krepec, Mahe, Popo. In America the Carib with Baniwa, Baree; Uanambeu, Juri; Purus, Coroato, Corope, Guato of Brazil; Cherente and Chavante of the Tocantins. To this group possibly belong the Coretu languages of the Orinoco.

Although there are many points of relationship between the Carib and the Dahomey, yet what is more assured is a connection with the Ankaras and Wun of Africa, which have a distinct affiliation with the Baniwa branch of the Carib.

To the Unembeu and Coretu branches of the Carib, the Aino of Yesso, etc., has affinities. This class may have reached America by the northern route, and also by the Pacific.

Through the kindness of Professor Panceri, the Marchese Antinori, and the Italian Geographical Society, I was favoured with some early specimens of the language of his two pygmies, Akkas, from the Nile region. They exhibit a conformity with the Ankaras and Wun, and with the Baniwa-Carib, also with Bongo, Moko, Cango, Rungo, and Wolof of Africa, Garo and Bodo of India, with Aino, and strangely enough with Javanese. Short races are found in Brazil.

The study of the group here named Carib-Dahomey is of great prehistoric interest.

The KICHAI and Hueco of Texas appear to be related to Iroquois, Pawnee, and Caddo.

The Nicaraguan MASAYA is related to the North American Mandan, Yankton, Winnebago, Dahkota, Osage, or Sioux.

The CHEROKEE and Catawba of North America are related to the Abiponian of the Missions of South America, Mbaya, Mbokobi, Vilela, Lule. There appears to be a relation to the Fellatah of Africa.

The KASIAS are remarkable as the builders of megalithic monuments. As yet I have not been able to affiliate this language. I have recognised resemblances to Naga, Mru, Bongo, and Begharmi. It would appear as if the constructors of megalithic and monolithic monuments were the rude predecessors of the city and temple builders. The Kasias lie near the Indo-Chinese.

The KAFFIR and BERBER classes I am unable to deal with. Dr. W. H. Bleek has shown, with regard to the Bantu or Kaffir, not only that it has Australasian alliances, but that its formations are to be found in the Semitic and Aryan languages. In a paper read before the Ethnological Society, I showed that the language of the Guanches was to be added to the Berber.

The KAZI KUMUK of the Caucasus has affinities for the West African Kru, Yala, and Kasa.

The AGAW class is one of the most remarkable of the prehistoric epoch.

(a) The *Asiatic* branches are Caucasian (Abkhass, Avkass, Absné); in High Asia Kajunah(?); in India Gadaba(?); and the Rodiya of Ceylon(?).

(b) *Australasia*: Galela, etc.

(c) *Africa*, North: Agaw, Agawmidr, Waag, Falasha or Black Jews, Dizzela, Fertit, Shankali, Koldagi, Somanli; in the West Egbele, Olomo, Buduma, Pati, Bayon, Bagba, Bamon, etc. (p. 157).

(d) *America*, North: Skwali, Sekumne, Tsamak; in Brazil,

etc., Guarani, Tupi, Omagua, Mundrucu, Apiaca; in the Missions; Morima, Sarareca; on the Orinoco, San Pedro, Coretu.

There seems to have been anciently a European branch, the Akhaioi or Achivi, who afterwards became Hellenised. They very probably occupied Aquitania also. To the Egyptians, they were known as Akaiusha [see F. Lenormant, "Origines"]; and as sons of Ham are represented in Genesis by Havilah.

In the West, anciently they were settled near the Lesghians, Lycians, Cilicians (Kilikians), Lakonians, and Ligurians (Cush?).

This class exercised a great influence in the propagation of culture. Its members seem anciently to have been all black.

To the Agaw class some Lake dwellers may be assigned. The Lake dwellers in Guiana now speak Guarani or Agau, and those of Lake Prasias were in undoubted proximity to Akhaioi, nor are the older lake sites remote from the ancient Akhaioi. [House and village = water, lake, etc.]

Many of the great rivers were probably named in the Agaw migrations, as Iberus, etc., Parana, etc. The Agaws were forerunners in America of the Sumerians. The Guarani animal names are distinctly Agaw.

A great class among the prehistoric languages, approaching the protohistoric, is the VASCO-KOLARIAN.

(a) In Europe it includes the Basque in its several forms.

(b) In Asia, Caucasian, the Lesghian, Kazi Kumuk, Akush Mizjezgli, Awar, etc.

(c) In India, the Kolarian group, Ho, Singbhum, Sontali, Bhumij, Mundari, Uraon, Kuri, Juang, etc.

(d) In Eastern Asia, Korean (?).

(e) In North Africa, the Furian.

(f) In West Africa, the Houssa, Mandingo, Bambarra, Yoruba languages, the Ebo, Ashantee and Fantee, Kossa, Fulah.

(Connected with the Akush may be the Kru, Grebo, Gbe, Dewoi, Bassa, Aro, Mbofia, Isoama, Isiele, Yala. (Compare Kazi-Kumuk).

(g) For America, I have not yet determined the members, but the Puelche of the Pampas appears to be one, and perhaps the Attakapa.

The Vasco-Kolarian has Tree and House conforming to Village and Grove. The roots for Tooth and Bone supply names for implements. The names of beasts are based on those for the dog, and altogether the early elements appear to belong to a stage when men were passing from an age of stone to one of bone, and from caves to tree dwellings.

The grammar exhibits what I have termed the Negative Series well developed. Its mythology is dual, not trinary or trinitarian, and traces of animism are defined. The early rudiments of culture are attested by the verbs.

At present, all the northern members are white or brown, and all the southern members black, but, in the time of Herodotus blacks existed as far north as the Caucasia.

One striking feature is that, notwithstanding the present social differences, the people are and have been warlike. The Basques resisted the Romans as they do the Spaniards; the Avars attacked the Roman Empire; the Lesghians, under Shamyl, resisted the Russians; the Sonthals rose in rebellion against us; the Koreans beat off the Americans and French, as they resisted the Chinese and Japanese; the Ashantees have encountered us in a war, where Houssas and Kossas also fought. The characteristic is general and persistent. The Reverend A. H. Sayce points out Basque affinities in Accad or Sumerian. These, as well as the Ugrian affinities (see Sayce and Lenormant), are most likely to be accounted for from the Hamitic relations. (See Ugrian, p. 157.)

In its Caucasian branch the Akush may stand in relation to the scheme in Genesis as Cush or Kush, with Mitzraim (Egyptian), Havilah (Agaw), and Canaan (Paleo-Georgian), that is with Accad and with Hamath. If so, these may all be treated for prehistoric purposes as Hamitic. [Comp. E. von Bunsen.]

The Vasco-Kolarian class has this attribute, that it particularly influenced the Dravidian, with which it has been assimilated by Caldwell and other authorities. Its main negative roots Gaba conform with Sumerian Paka, showing the same mental basis of formation.

The Lycian language differs from the others in Asia Minor, and, as pointed out, populations with allied names are found in proximity to those of Agaw names. M. Lenormant has suggested that Lycian and Lakonian were perhaps allied. It is possible to go further, and suggest a distinct Lesghian origin [the Georgian is Lekki], which may be referable to Peleg and Pelasgic, and may include Cilicians (Kilikians), Leleges, Lucanians, Ligurians, and Ligyes.

The Abkass and Lesghian populations may have been united in raids in the Mediterranean.

What is the exact place of the UGRIAN class, or what are its real constituents, I am unable to determine. By some it is held to include four chief branches, and is treated as Altaic, that is Finnic (including Magyar), Mongolic, Manchoo, and Turkic.

I am by no means satisfied that the connection goes further than a common subjection to the influence of a contemporaneous prehistoric epoch, affording a community of grammar and a participation in some terms of culture. For that matter, like influences, though to a slighter degree, may be recognised even in English.

So far as the Finnic or Ugrian is concerned, an important

member is to be added, and that consists of tribes in East Nepal and the frontiers of Tibet and China, including Rodong, Rungchenbung, Chhingtangya, Nachhering, Waling, Yakha, Chourasaya, Kulungya, Thulungya, Bahinga, Lohorong, Lambichhong, Balali, Sangpang, Dumi, Khaling, Dungmali, and Kiranti in East Nepal; Takpa and Manyak on the Chinese frontier; Sunwar, Gurung; Moormi, *Magar*, and Newar in Nepal; and Vayu among the broken tribes of Nepal. The languages of North-west Bengal, which are influenced by the Himalayan Ugrian, are Bodo, Borro, Kachari, and Dhimal; and the Miri (Abor and Sibsagar) of the eastern frontier of Bengal.

It will be seen that among the above names is *Magar*, and this and its neighbours closely approximate to Magyar, as other languages do to Fin. There is strong ground for believing that the settlement of Hungary was effected by a large body of tribes of Himalayan Ugrians, under Avar or Khunzag (Hun or Lesghian) leaders. There is, however, a Hung subtribe of the Limbu. Thus a Finnic language was introduced rather from the Himalayas than from North-western Asia.

[It may be noted that on the Gaboon in Africa some affinities of language are to be traced in Bayon, Pati, Kum, Bagba, Balu, Bamon, Ngoala, Momenyah, Papiah, Param, but these also show affinity with Agaw, p. 154.]

The Rev. A. H. Sayce ("Akkad Seal" in *Journal of Philology*) has shown some strong resemblances between Akkad and Ugrian, particularly in pronouns and numerals, and these have been supported by M. E. Sayous and M. F. Lenormant ("*Lenormant Etudes Accadiennes*," vol. i, part 1, p. 200, and part 3, p. 133, also *Magie*, 1874). The test of pronouns accepted by philologists is very weak (see Pronouns after). In my view the affinities are not to be regarded as confined to Ugrian, because some of the alleged affinities are common to the prehistoric epoch, and others are to be attributed to the, as yet, undetermined influence, which equally affects the Tibetan and the Chinese. The relation of Georgian with Akkad is very great, and yet it is none the less so with Tibetan, as was illustrated by Bryan Hodgson, Dr. Latham, Dr. Prichard, and Edwin Norris. This view I supported, but I am inclined materially to modify it.

With regard to the Manchoo I have stated (in the *Phoenix*) that the few remaining Scythian words preserved by Herodotus appear to conform.

The MALAY class is to be regarded as prehistoric from the evidence of the culture of the populations, though the populations and their languages must have been largely modified by protohistoric influences, but at the same time they bear also the impress of the ruder prehistoric classes, even of the Sandeh, the Akka, and probably of the Pygmean.

The Circassian and Otomi, etc., may be either intermediate between Agaw and Sumerian, or are to be included with the latter. If so, they were outlying and advanced members, and in the occupation of America must have closely followed the Agaw.

As PROTOHISTORIC languages I propose Egyptian, Sumero-Peruvian, Chinese, Tibetan, Dravidian.

The protohistoric languages will be found to be less widely distributed than the prehistoric. With the exception of the great branches of the Sumerian (Peruvian, Mexican, etc.), and a doubtful affinity of Dravidian, they did not reach America.

It was only through the Egyptian they affected North-east Africa and West Africa, nor did they spread over Australasia.

Where the EGYPTIAN class should be placed I am unable to determine. It includes, as I have shown ("Comparative Grammar of Egyptian, Coptic, and Ude," in "Journal of Anthropological Institute," 1873), the Ude language of the Caucasus. Its characteristics are those of remote antiquity. Leo Reinisch, in his laborious work on the unity of language (Vienna, 1874), has illustrated the connections of the Egyptian and Coptic with the Teda or Tibbu class. With this subject Dr. Carl Abel of Berlin is now dealing.

Thus we obtain a conformity of ethnographical facts, observed elsewhere, for we should find Mitzraim in the neighbourhood of Kush in a North African centre.

The SUMERO-PERUVIAN class will be dealt with in detail in the after part of this memoir.

The CHINESE class requires to be more carefully studied, because, as the Chinese has been influenced by other earlier civilizations, there has been a fancy to give to similar phenomena in other languages, or in other culture, a Chinese origin. The alleged influence of Chinese in America is referred to hereafter as more probably Sumerian.

Of the TIBETAN class the same remark is to be made. Thus the followers of Bryan Hodgson, including myself, have included under Tibetan what will most likely have to be separated, certainly the Himalayo-Ugrian. A common religious influence, as in the case of Islam, is very apt to lead to similar and common appearances in language and culture.

As regards the DRAVIDIAN class my object is to avoid entering into detail. I believe its influence to be much smaller in truth than what Caldwell and other Indian authorities, looking at it from a Tamil stand point, have been inclined to attribute to Dravidian. Vasco-Kalarian has greatly influenced this class.

To Dravidian should most likely be referred Japanese and Loochoo, which have likewise Basque similarities. The Brahui (Caldwell, p. 25) has Tamil affinities (Felice Finzi, *Il Brahui*, 1870).

The Circassian of the Caucasus and the Chetemacha of North America show some affinity to Dravidian, but the Circassian is allied to the Othomi of Mexico, and is for the present classed with Sumerian.

As yet, I have failed to account for an important period in language and culture, which greatly influenced the historic period. Passing beyond the dual system, or more properly that of pairs and positive and negative elements, a sacred system of three was introduced. In grammar we have these triple forms. and triliteral roots, the latter in Semitic and the other in Aryan. Mythology was greatly affected by a trinitarian and triune system, embracing one great member, one male and one female.

In grammar, there are three parts (noun, verb, and participle), three nouns (noun, adjective, and pronoun), three numbers, three cases, three degrees, three verbs (active, neuter, or middle, and passive), three persons, three tenses, three moods, three participles, three particles (adverb, preposition and conjunction), three concords.

As HISTORIC languages, I classify Semitic, Aryan.

As my present programme is to deal with the earlier stages of language, this epoch is passed by. It is, however, necessary to observe that many roots and characteristics, which are regarded as Semitic or Aryan, are in reality prehistoric, and that for the consideration of the prehistoric and protohistoric periods, the historic aspect is generally useless or mischievous. The same remark applies equally to mythology and philology. It is also untrue that Sanskrit in itself affords evidence as to the early culture of mankind, apart from the prehistoric languages.

These classes of languages, prehistoric and protohistoric, are now chiefly found in various regions, which in some periods have been centres of migration, and in others centres of refuge for the earlier races driven in by those more powerful of the protohistoric and historic epochs.

The chief of these regions are:—High Asia, Caucasasia, North East Africa (Nile), West Africa, India, North-East Asia, North America, Central America, South America.

The distribution and order of succession may thus be represented:— (See next page.)

The relations of High Asia may thus be briefly represented:

	High Asia.	Caucasus.	Africa.	America.
Agaw or Havi-				
lah ...	Kajunah ...	Avkhas ...	Agaw ...	Omagua
Ugrian ...	E.Nepaul,Turk, Mongol ...	—	Bayon, etc. ...	—
Egyptian ...	(Mitram) ...	Ude ...	Egyptian ...	—
Sumerian ...	(Unknown) ...	Georgian? ...	—	Peruvian, etc.
Chinese ...	Chinese ...	—	—	—
Tibetan ...	Tibetan ...	—	—	—
Aryan ...	Dard ...	Ossetinian ...	—	—

There can be no reasonable doubt that High Asia is a centre to which in ancient times, on the west Caucasia, the Nile and West Africa conformed, as India did to the south; but it has been denuded of its early black races, and of many later. For instance, the number of Aryans is very small.

From High Asia, Caucasia was supplied to the west, and thence the African regions, which present a parallel. To the south are found India and Australasia, and to the east, North east Asia, North America, Central America, and South America. If the southern margins, including Aaros, etc., were taken, we should obtain early prehistoric members.

The following shows the relations of the Caucasian centre :

	Caucasia.	W. Africa.	N. Africa.	Europe.
	Kazi Kumuk	Kru ...	—	—
Agaw or Havilah ...	Avkhass ...	—	Agaw ...	(Akhaioi)
Vasco-Kolarian or Cush	Lesghian ...	Houssa..	Furian ...	(Ligurian?)
	—	—	—	Basque
Egyptian or Mitzraim .	Ude... ..	Tibbu ...	Mitzraim ...	—
Sumerian or Canaan ...	Georgian ...	—	—	Etruscan?
	Circassian ...	—	—	—
Dravidian "	—	—	—	—
Aryan	Ossetinian...	—	—	W. Aryans

	High Asia.	India.	America.
Agaw or Havilah ...	Kajunah ...	Gadaba? ...	Omagua
Vasco-Kolarian or Cush	—	Kolarian ...	Puelche?
Egyptian or Mitzraim..	(Mitzraim?) ...	—	—
Sumerian or Canaan ...	(Akkad) ...	Peguan ...	Peruvian
	—	—	Othomi
Dravidian "	—	Dravidian ...	—
Aryan	Dard	Aryans ...	—

The languages and mythology of High Asia were reproduced, and their parallels were found in Caucasia, which came in the historical school of Babylon to be regarded as the Paradise or cradle of the human race. The migrations were transferred to the Nile region, and at a later day the localities were mixed up with those of Caucasia and High Asia.

The following shows the relations of the Nile centre :

	N. Africa.	W. Africa.	Europe.	Caucasia.
Pygmean ...	Gonga ...	—	—	—
Sandeh ...	Sandeh ...	—	—	—
Garó ...	Yangaro ...	—	—	—
Khasia ...	Bongo ...	Begharmi ...	—	—
Agaw ...	Agaw ...	Egbele ...	(Akhaioi) ...	Avkhass
Egyptian ...	Egyptian ...	Tibbu ...	—	Ude
Semitic ...	Subsemitic...	—	—	—

	High Asia.	India.	Australia.	America.
Pygmean ...	—	—	Andaman ...	Shoshon
Sandeh ...	—	—	Tasmania ...	—
Garó ...	—	Garó ...	(Java?) ...	Paduca?
Khasia ...	—	Khasia ...	—	—
Agaw ...	Kajunah ...	Gadaba ...	Galela ...	Omagua
Egyptian ...	—	—	—	—
Semitic ...	—	—	—	—

The Nile region must be looked upon as the transmitting station for West Africa.

The following shows the relations of West Africa, as a centre of language and population :

	W. Africa.	N. Africa.	Caucasia.	India.
Wolof ...	Wolof ...	—	—	Khond
Lenca-Kouri ...	Kouri ...	—	—	—
Carib-Dahomey ...	Dahomey ...	Akka ...	—	Garó
"	(Fellatah?)...	—	—	—
"	Kru ...	—	Kazi-Kumuk	—
Agaw ...	Egbele, etc...	Agaw ...	Avkhass ...	Gadaba
Vasco-Kolarian ..	Houssa, etc..	Furian ...	Lesghian ...	Kol
Ugrian ...	Bayon, etc...	—	—	E. Nepaul
Egyptian ...	Tibboo? ...	Egyptian ...	Ude... ...	—
	Asia.	N. America.	C. America.	S. America.
Wolof ...	—	—	—	—
Lenca-Kouri ...	—	—	Lenca ...	Coretu?
Carib-Dahomey ..	Aino ...	—	—	Carib
"	—	Catawba ...	—	—
"	—	—	—	—
Agaw ...	Kajunah ...	Skwali ...	—	Om-agua
Vasco-Kolarian ..	—	Attakapa?...	—	Puelche?
Ugrian ...	Ugrian ...	—	—	—
Egyptian ...	—	—	—	—

It will be seen that the copious series of West African classes are transmitted from the east, and must have traversed the Nile region; and the barbarism of W. Africa is attributable to its non-participation in the higher migrations.

Passing from High Asia to the south, we have to consider the relations of India as a centre, which are thus illustrated :

	India.	Africa.	Caucasia.	America.	Misc.
Wolof ...	Khond ...	Wolof ...	—	Carib ...	—
Kamchatdale ...	Thug ...	—	[ka ...	—	Kamchat-
Garó ...	Garó ...	Yangaro, Ak-	—	Paduca, N...	— [dale
Khasia ...	Khasia ...	Bongo ...	—	—	—
Agaw ...	Gadaba ...	Agaw ...	Avkhas ...	Omagua, S...	—
"	Rodiya ...	Egbele ...	—	Skwali, N...	—
Vasco-Kolarian ..	Houssa ...	—	Lesghian ...	Puelche?	Korean
Ugrian ...	E. Nepaul.	Bayon ...	—	—	Ugrian
Sumerian ...	Cambojan.	—	Georgian? ...	Peruvian ...	Indo-China
"	Peguan ...	—	Circassian? ..	Othomi ...	—
Tibetan ...	Tibetan ...	—	—	—	Tibetan
Dravidian ...	Tamil ...	—	—	—	Japanese?
Aryan ...	Aryan ...	—	Ossetinian...	—	W. Aryan

In the prehistoric period there was an absolute conformity between India and Africa, which is confirmed by collateral ethnological facts.

From India was most probably the route of departure for Australasia, and for Indo-China, and through these to America in the later epochs.

North-east Asia constituted a centre of passage for migration.

			N. E. Asia.		America.		Africa.
Pygmean ...	...	...	Eskimo ...	...	Eskimo ...	...	Bushman
Carib ...	...	...	Aino ...	...	Carib ...	...	Dahomey
Agaw ...	...	...	?		Om-agua ...	...	Agaw
Vasco-Kolarian ...	...	...	Korean ...	...	Puelche? ...	...	Houssa, etc.
Dravidian ...	...	...	Japanese ...	...	Chetemacha?...	...	—

The Agaw class appears to have left no representatives in north-east Asia, nor did the Sumerian. They are, however, most developed in the southern regions of America. It is to be inferred that whilst the other and earlier migrations passed over Behring's Straits, the latter passed over the Pacific by Easter Island. The mound builders may have passed over by the northern route, but they may have been intermediate between the Sumerian and Agaw migrations.

The relation of the languages of America with those of the old world has been exhibited at each stage, but the comparison is shown in a succeeding table, and which represents an affinity of at least a hundred languages on each side.

Languages common to America and the Old World.

		America.		Old World.
Pygmean	...	Creek, Natchez, N.	...	Mincopie
"	...	T. del Fuego	...	
"	...	Shoshoni, N., Darien, C.	...	Mincopie
"	...	Mayoruna, S.	...	Gonga, Afr.
"	...	Eskimo, N.	...	Eskimo
Garó	...	Paduca? N.	...	Garó, Yangaró, Afr.
Lenca-Kouri	...	Honduras, C.	...	Kouri, Afr.
Carib-Dahomey	...	Carib, S.	...	Dahomey, Afr. Aino
Agaw	...	Omagua, S.	...	Agaw, Afr. Avkhas
Vasco-Kolarian	...	Puelche? S.	...	Houssa, Afr. Kol
"	...	Attakapa? N.	...	
Sumerian	...	Maya, Mexican, C.	...	Indo-Chinese
"	...	Peruvian, S.	...	Akkad
"	...	Othomi, N.	...	Circassian

With the absolute chronology of these successions I do not propose to deal. Three thousand years ago, the Sumerian race had come in contact with the Semitic, to which it had to succumb. Seven hundred years later is perhaps to be taken as the epoch of conflict with the Aryan race. This, however, gives us no real instrument of measure. We do not sufficiently know how far the members of the Hamitic classes are to be regarded as synchronous.

This is to be observed, on the other hand, that it must have taken long periods for races so weak as the Pygmean to have permeated the world, penetrating to Tierra del Fuego by traversing Behring's Straits and the whole Pacific coast of the Americas.

Although the Sumerians were assailed by the Semites three thousand years ago they were only overcome by the Spaniards four hundred years since and in Indo-China they still flourish. The question, therefore, is not the duration of culture in the form of language, but what are the spaces required for its development.

If the Sumerian settlement in Babylonia took place four thousand years ago (see Ernest de Bunsen, "Chronology of the Bible") then the settlement in India would be of the same date, if the migration was from a common centre in High Asia, as the division of West and East Sumerian in pronouns and other details seems to indicate.

The settlements in Indo-China would shortly follow, and afterwards the occupation of Java and the islands.

It is quite within compass that Pera was reached three thousand years ago, or even four or five thousand. It is to be observed that the Malay occupation of Australasia must have cut off the Sumerian intercourse with America. Then it is to be taken into consideration that if the intercourse had been kept up at a time when large ships were used by the Phœnicians, Chinese, Greeks, Romans or Arabs, we should have witnessed different conditions. Cattle and horses would have been carried across the Pacific. Had the intercourse from Indo-China to South America been fresh in the memory the Arab navigators would have heard of it.*

There is a prevalent notion among naturalists that words are perishable and cannot be transmitted, but that is founded on an erroneous conception, particularly of facts stated by Mr. A. R. Wallace. It is certainly true that under some circumstances words are subject to mutation, but even in this respect there are mostly limits to mutation; but it is, nevertheless, certain that words can be transmitted for thousands of years. So far as the Sumerian is concerned words written three or four or five thousand years ago in Babylonia, where the language is extinct, are preserved in an unwritten form by American populations. Still longer periods must have passed for the diffusion of the identical words in the Kolarian of India and of Houssa, and more still for the period of diffusion of Wolof in Africa and Khond in India.

* It is possible that the legend of the roc, in Sindbad's voyages, may refer to the condor, and that there may be other traditions traceable besides those of the four worlds, and the later Chinese intercourse treated of by the Abbé Pipart (Congress of Orientalists, 1873, p. 187) and by Mr. C. G. Leland.

To naturalists, I would particularly point out the names of animals common to South America and Central Africa.

The observance of these facts and of the law resulting therefrom is of great importance in the whole history of culture, because they give us a life for a word or for a myth, as for a race, and in many cases the word or the myth is more purely preserved from intermixture than the cranial forms.

It will thus be seen that the way in which I propose to deal with the prehistoric and proto-historic periods is other than the methods adopted in the valuable works of Sir John Lubbock, Mr. Tylor, Professor Reinisch, or Professor Frederick Muller, and that collaterally and by a parallel path, I follow the investigations of Colonel Lane Fox and Mr. J. Evans. If I go beyond these, I do not enter on the domain of later philology and mythology, which has been occupied with so much learning and ingenuity by Professor Max Müller and others.

PREHISTORIC COMPARATIVE PHILOLOGY is closely connected with comparative mythology, and the two subjects illustrate each other. It would, therefore, be well if the term cultural philology could be employed.

In the prehistoric period an idea was represented by three or four words, and, again, a word was represented by three or four ideas. Thus we find that words or roots are interchangeable, and it is necessary to study their morphology, for the purpose of understanding the equivalents and real connection of roots in various languages.

Table of Equivalents of Roots and Words.

Above	... Sky, day	Black	... (Negative series)
Acorn	... Stone, bead ?		Not, night
Air ...	... Breath, wind, soul, sky		1 ? 6 ?
Ant ..	... Bug, fire ?		Tribal name (Wolof)
Arm ...	... Hand, foot, leg	Blood	... Head, red, water
Arrow	... Bone, tooth, horn, bird	Boat, ship	... Fish, box, bowl, plough
	Lance, knife, axe, hatchet (death?)	Bone...	... Rib, leg, tooth, horn
			Tree, arrow, spear, white ?
Anger	... Arrow	Born...	... (negative) Child
Axe (see hatchet)		Bow ...	... Arrow
Bad ...	... Not (negative series), [night	Bowl...	... Boat
	Not good	Box ...	... Boat
Bat ...	... Bird	Boy ...	... Child, son, born
Bead...	... Egg, bean, pea	Breath	... Air, wind, soul
Bean...	... Bead, pea, egg	Brother	... Father, uncle
Bear...	... Teeth		Sister
Beard	... Mouth, hair, nose		Side
Bee ...	... Honey fly	Bull ...	... Elephant, stag, cow, tooth, tusk, horn
Before	... Mouth		
Belly	... Womb	Calf ...	... Oxchild
Bird ...	} (Negative series)	Cat (phonetic)	
Fowl	} Foot, leg, hand, rat	Chief, see king	
Bitter	.. Sour, bad		

Child	... Mouth? son, born	Fowl(see bird)	
Claw...	... Foot, nail	Fox ...	... Dog, kite
Cow ...	... (Negative series)	Girl ...	... Daughter, woman
	Woman	Go ...	... Eat, drink, run, move
	Mother bull, ox woman	Goat...	... Ewe (negative series)
	Ewe, goat		Dog
Crow (phonetic)	Blackbird, dog	God ...	... Name, sky, fire
Cuckoo (phonetic)		Gold...	... Sun, snake
Dart...	... Snake, lance	Grain ...	... Field
Daughter	... Son, born	Green	... Black, yellow, grass
	Girl, woman, mother	Hair ...	... Tooth? Star?
	Cow		Head
Day ...	... Sun, light, sky, above, 5		Thread, cord, stuff, wool
Dead	... (Negative series)	Hand	... Foot, arm, leg, fowl, 5
Dog ...	... Horse, cat, hog, eagle, cow, fish, snake	Hatchet	... Knife, arrow
Door...	... Mouth, word, speak, house	Hawk	... Fox
Dove	... Eagle [tive)	He, they	... Man, 3
Dream	... Death, sorcerer (nega-	Head	... Hair
Drink	... Eat, speak, go, within		Man, chief, king
Dumb	... (Negative)		Mountain, stone, foot, finger
Dust...	... Earth, sand	Hear...	... Ear
Eagle	... Wolf, dog, rat, dove	Heart	... Blood, hearth, house, earth, hair, liver, lung
Ear ...	... (Negative series)	Heaven	... See sky
	Egg, sun?	Here...	... This, thou
	Hear	Hog ...	... Dog, goat, horse, fat?
Earth	... Heart	Hoof...	... Foot
Eat ...	... Drink, speak, go, within	Hoopoe (phonetic)	
Eel ...	... Snake, fish	Horn...	... Nose, bone, tooth, arrow, ship, elephant, etc.
Egg ...	... Bird, fowl	Horse	... Dog, hog, snake, sun, run
	Bead, bean, pea, round	House	... Heart?
	Ear		Tree
Eight	... 4, 2, 5 + 3 (otherhand 3)		Mouth, door
Elephant	... Tooth, bone, bull, stag	I, me...	... One
End ...	... Tail	Iron ...	... Hard
Executioner	... (Negative series)	King...	... Head
Ewe ...	... (Negative series)	Kite ...	... Fox, dog
	Cow, woman	Knife	... Arrow, lance, hatchet
Eye ...	... Mouth, face	Lake...	... River, house
	Man, I	Lance	... Tongue, dog
	Sun		Arrow, knife, hatchet
	See, water	Leaf ...	... Flower, tongue
Face...	... Mouth, eye, nose	Leg ...	... Foot, hand, bone
Far ...	... Long	Light	... Day, fire, sun
Fat ...	... Oil, hog?	Lion ...	... Dog
Father	... Mother, brother, man	Liver	... Lung
Feather	... Tongue (leaf?)	Long...	... Far
Female	... (Negative series)	Lord, see king	
Field	... Grain	Man ...	... Father, head, Woman
Finger	... Teat, head of hand		Eye, sun
Fire ...	... Sun, light, day, God? animal names		He, they
Fish ...	... Snake, dog, bird? sun, Ship, boat		(Tribe name)
Five ...	... Hand, sun	Mare...	... (Negative series)
Flower	... Leaf	Milk ..	... Water, water x
Fly ...	... Mouse? bug, ant	Mill ...	... Stone
Foot ...	... Hand, arm, leg, head	Mole...	... Nose
Forest	... Village	Monkey	... Above
Four ...	... 2, 8, 9, many		

Moon	... Mother, mouth, woman, (negative series)	Skull...	... Shell, headshell
	Sun, star	Sky ...	... Above, day, sun, air, mountain
	Skywoman, night eye	Snake	... Fish, rat, horse, dog
	Red, two	"	... Dart
Mother	... Father	"	... Sun, gold
	Woman, wife	Snow	... (Negative series)
	Moon, mouth	Son ...	... Child, boy, water
Mountain	... Head	Sorcerer	... Dream, death
Mouse	... Fly? rat	Soul ...	... Breath, wind, air, sha- dow
Mouth	... Word, speech, tongue	Spark	... Star
	Mother, moon, woman	Speak	... Mouth, door, before, eat, drink
	Before		
	Door	Spear	... See lance
	Child	Spittle	... Mouthwater
Move...	... Go, run	Stag ...	... Bull, elephant, goat, horn, etc.
Nail ...	... Thorn	Star ...	... Sun, moon, spark, ani- mal names
Naked	... (Negative series)	Stone	... Rock, tooth, stool
Name	... Sun, God (negative?)		Pound, mill
Nerve	... String, vein		Acorn
Nest ...	... Egg, womb (negative?)		Head
Night (nega- tive series)	... Not, night	Stool...	... Stone
	Black	String	... Thread, hair, nerve
	Kill, executioner	Sun ...	... Day, fire, light, sky
	Female		Moon, star
Nine ...	... 5 + 4, 4 of other hand		Skyeye, Skyman
No, not	... (Negative series)		Eye, nose, man
	Not, yes		Animal, dog, snake,
Nose ...	... Horn, beard, mole, head		fish
Nut ...	... Egg (negative series)		Gold
Oil ...	... Fat		5
One ...	... I, me		Yes
	White? black?		Name
Ostrich	... Snakebird, birdsnake	Swan	... Dog
Pea ..	... (See bean)	Sword	... Knife, stick
Phallus	... (See tail)	Tail ...	... Phallus, end
Plough	... Ship	Teat ...	... Finger
Pound	... Stone, mill	Tear ...	... Eyewater
Rat ...	... Mouse, wolf, eagle, bird, snake	Ten ...	... Foot, hand
Red ...	... Blood	Tendon	... See Nerve
	Two (negative series), seven?	This ...	... Thou
Rib ...	... Bone, side (=woman?)	Thorn	... Nail
River	... Water, water running,	Thou...	... This, that, 2
Round	... Egg [village	Three	... Black? He?
Run ...	... Go	Tiger	... Dog, sun, fire
Salt ...	... Sour	Tongue	... Mouth, speech, knife, lance, leaf
Sand...	... Dust, earth		
See ...	... Eye	Tooth	... Bone, horn, arrow
Seven	... 5 + 2, two of other hand, red? white?		Elephant, bear
Shadow	... Soul, eclipse (negative)	Tree ...	... Wood, tooth? bone?
Sheep	... Goat, see ewe		House, village
Shell...	... Skull	Two ...	... Red (negative series)
Ship ...	... Fish, plough, horn	Vein ...	... Nerve
Sister	... Brother, daughter	Village	... Forest, tree, river, lake
	Woman-brother, wo- man-cow?	Water (nega- tive series)	[village River, child, eye, house,
Six ...	... 5 + 1, one of other hand	White	... One, seven, bone
		Wife ...	... Motherman see (woman)

Wind	... Breath, air, soul		Mouth, yona, moon
Window	... Hole	Womb	... Belly
Wing	... Ear	Wood	... See tree
Witain	... Eat, drink	Wool...	... Hair
Wolf...	... Dog	Word	... Mouth, speak, door
Woman(negative series)	Man	Yes ...	... Light, day, sun, not-no
	Wife, mothergirl	Yona...	... Woman, mouth, moon

Among the earliest forms of words and those most widely distributed and longest preserved are those for parent, at a later date discriminated into father and mother. The complex relations of kindred and of terms for it have been well treated by Sir John Lubbock.

The Georgian language presents one example of the inversion of the usual distribution in Sumerian and other classes, *mama* being father, and *deda*, mother.

In no department, perhaps, is the bearing of equivalent roots more strongly seen than in ANIMAL names.

In Vasco-Kolarian many names of animals are allied to *Kari*, dog, and this phenomenon is to be seen throughout.

This root appears to be allied to *Kurritcea* Basque, to run. In some languages the stork is named from being a runner. In prehistoric philology fowl is allied to foot and leg, most likely from running.

One true origin of animal names is perhaps to be found in a passage of Herodotus, iii, 16, dwelt upon by Mr. Tylor, "Early History of Mankind," p. 235. It runs, "By the Egyptians also it hath been held that fire is a living beast, and that it devours everything it can seize, and when filled with food it perishes with what it has devoured."

Being led to test this I found the word fire to conform with dog and tiger in Hunter's "New Aryan Dictionary," and further, sun and star to conform. This I ascertained to be a general law of prehistoric language. If the word tiger be taken, the forms, although conforming also to dog, are mostly sun forms.

Snake conforms to sun in virtue of the same law, and hence its place in nature-worship with the sun.

As the sun and stars have movement it is to be conceived that men were led to assimilate to them the moving animals, beasts, birds, and snakes. As fire is allied to the sun, and as fire eats, so too was a conformity found with devouring beasts of prey.

It is by no means impossible that the idea being so taken the phonetic was obtained from crow, which gives the forms *ka*, *kawa*, *kali*, *koura*, *klah*.

It may be a question whether the cock or the crow gave name to birds, for though Mr. Tylor ("Primitive Culture," i, 207) quotes *akoka* in Ebo, *kuku* in Zulu, and *kukko* in Finnish for the cock,

yet *kaka* is a wide name for the crow, and the same form has supplied the word for cuckoo too.

It is within compass that positive and negative names in the form of sun and moon-names may have furnished many epithets, the sun for names of male animals, the moon or mother for female animals. It is certainly the case for female animals, but on account of common names being used for male and female, it is difficult to discriminate in all instances.

The word for tiger in "Hunter's Dictionary" is so commonly a sun word, that we may in this way, from verbal mythology, obtain some notion why the tiger is so mysteriously regarded in India. This does not, however, support weather or cloud mythology.

It is possible that the Egyptian doctrine may be applicable to the Akkad cases, where *L* is an animal characteristic (as in *man*, *mulu*; *mother*, *luku*; *stag*, *lulum*; *sheep*, *lu*; *some beast*, *lubat*; *bull*, *la*; *dog and lion*, *liku*). Sun is, however, *lakh*; moon, *lid*; light, *lik*; and eye, *lim*. There are traces of the same phenomena in Aymara and in Mexican. This syllable appears to exist in Indo-European and Semitic as in *lupus*, *lepus*, *alopex*, *leo*, *lagos*, *lukus*; *aleph*, *elephas*, *elaphros*.

With the sun idea I should be inclined to connect the fact that with the Algonquins (Tylor, "Primitive Culture", i, 302) not only all animals belong to the animate gender, but also the sun, moon, and stars. The animate gender includes trees and fruits, and, besides, the altar, sacrifice stone, the bow, the eagle and feather, the kettle, tobacco pipe, drum, and wampum.

In Genesis ii, 19, etc., it is said of every beast of the field and fowl of the air that "whatsoever Adam called every living creature that was the name thereof. And Adam gave names to all cattle and to the fowl of the air, and to every beast of the field."

This appears to preserve the tradition, that in the prehistoric epoch man did name the beasts and birds, the system pursued being still recognisable.

The names of beasts being founded on the type of the dog, names of birds are founded on those of beasts.

It can readily be understood how the vulture is named after the tiger, the hawk after the fox. The ostrich is a snake bird, the swan a dog, and swine.

Insects are also named after beasts.

In the same way the snake is assimilated to the horse, rat, and fish, as it is to the sun.

The fish is the equivalent of the horse and snake, the eel is a snake-fish.

The bat is a bird.

Of distinctive names for animals are to be noted, for elephant,

tooth; for bear, teeth; for mole, nose; for horse, runner; for fowl, leg and foot.

Other equivalents will be found in the foregoing table of equivalents.

The names of animals are in some cases obtained from combination of syllables, expressing life, running, negative, and for females, a female or mother, negative. Thus in various permutations LR, LRN, LN, LNN, RN, RNN, LM, LRM, RM. In the Agaw, etc., is BR.

Mr. Tylor ("Early History," p. 312) quotes Humboldt, ("Vue des Cordilleras," pl. xv,) with regard to the Mexicans having retained the traditions of the elephant as a myth of observation. It has appeared to me that the Tasmanian names given to European animals resemble Sandeh names of African animals, which must have been preserved by tradition.

A good example of the common distribution of animal names will be found in those of the Nile region, Agaw, etc., with Guarani of Brazil, as Ta-piyrá, Taia, etc.

The connection of the names of *Weapons*, with their distribution, was illustrated by me in a note on the words for arrow, in a paper on the Prehistoric Names for Weapons read at the British Association in 1873.

It was this investigation of the connection between archæology and philology, suggested by Colonel Lane Fox's lectures, which enabled me to lay a firmer basis for the investigation of the connections between India and Africa and between the new world and the old, because it became evident that these were prehistoric, and connected with successive migrations.

The names for weapons will of course vary in neighbouring tribes and be unequally distributed, and more particularly because the names of weapons are sometimes taken from conquering races.

It appears to me that the names BK, BN, and KN are formed on negative roots, as the word to kill or die, expressive of the characteristic of a weapon of death.

I shall now give some examples of the distribution of roots for arrow or dart, knife, sword, axe or hatchet, and spear or lance.

Root BK.

	Asia.	Africa.	South America.
Arrow	Gyarung—kipi Kari Naga—takaba Mrú or Tóung of Burmah—quai	... Houssa—kebia	... Itenes—kivo
Knife.		Houssa—takobi Fulah—kafahi Wolof—paka	... Skwali—khawughkhan ... Watlala (Chinook)—khawukhe Pujuni—kiaí

	Asia.	Africa.	South America.
Sword		Houssa—takobi	
		Fulah—kafahi	
Spear.		Batta—kubi	

A curious point is in the parallel forms.

	India—kipi ...	... Houssa—kebia
	takaba	... takobi
Root BN.		
Arrow	Burmese—pen	... Mandingo—benyo
	Malay ...	... Bambarra—bien
	Javanese—pana	... Ashantee—eben
	Sanskrit—banah	
Knife.	Khond—penju	
	Telugu—banamu	
Spear.		Mandingo—benyo

Root KN.		
Arrow	Tharu—khando	... Fanti—egandua
	Madi—kani	
	Chentsu—kondu	
	Tamil—kanei	

Root DM.		
Arrow	Sontali—jhampa	Keracares—tomete
	Thaksya—tume	
	Tamil—ambu	
Spear.		Mandingo—tambu
		Bambarra—tama
		Ashantee—kami
Axe ...		Ashantee—ekuma

The bead in the Wolof and Vasco-Kolarian is related to egg, pea, bean. Thus it would appear as if beads were strung eggs and round seeds of plants. It may be that the pea and bean, being eatable, are named after egg and fowl, and that the bean was consequently endowed with various mythological attributes.

In Basque, the names for pea, bean, and acorn appear to be related to stone.

Mill was related to stone and rub.

Several names of weapons appear to be related to snake and dog, as if running swiftly, and endowed with life, others, as said, to death.

The phenomena of the PRONOUNS of a class are remarkable. In the early epochs they are seldom generally or evenly distributed. The first pronoun singular may be uniform, but even this is not a rule. The second and third persons are frequently interchanged.

It is, however, on pronominal and grammatical forms that many philologists most insist as a test of affinity.

A curious example of disturbance is found in Akkad and Georgian. Each has double plurals for nouns, for these in Georgian *bi* and *ni* are in Akkad the third personal pronoun.

The cause of this phenomenon is to be found, and is in fact

generally indicated in that excellent treatise on gesture language, which forms a chapter of the "Early History of Mankind." It is because gesture was used to determine the word used for a person as a pronoun.

The use of DETERMINATIVES for the distinction of classes of objects is inherent in the prehistoric languages. It is particularly applied to the members of the body, and sometimes to animals.

Its application will be sufficiently exhibited by its copious forms in Basque.

Comparative philology.—Prehistoric determinative or distinctive particles.

	Basque.		Basque.
Head	bu	Forehead	be
Hair	bi	Beard	bi
Eye	be, bel	Back	bi
Eyebrow	be, buff, bier	Breast	bul
Ear	be	Fowl	be
Head	bi	Cow	be?
Arm	be	Grass (hair)	be, bel
Knee	be	Crow	be
Elbow	be	Mare	be
Nail finger	be	Lungs	bul
Thumb	be, ber	Tail	bu

The Coptic definite articles are:—Masculine, P-, Pi-; feminine, T-, Tii-, Te-; plural, Ne-, Nen-. These are probably derived from the older determinatives:—Vasco-Kolarian B-, Guarana-Agaw; T-, Te. The common prehistoric determinative:—N-, Ni-.

Animal members are marked out by O—North America:—Blackfoot, Cayuga, Mohawk, Onondaga, Tuscarora, Cahuilo.

What Mr. Tylor ("Primitive Culture," i, 220), has pointed out with regard to the DIFFERENCING of distance by sounds, in the case of pronouns and adverbs, and what Professor Max Müller, expounding various authorities, has shown with regard to gender, are only applications of a general law.

It is by differencing by vowels or consonants that in the prehistoric languages distinctions are drawn between the meanings of the same roots, and this is well seen in the way in which an animal name for dog is made distinctive for various animals.

This law of differencing has not received the attention it deserves. It is the true cause of some of the phenomena which have been attributed to normal changes of sounds, to phonetic laws, to Grimm's law in particular, and to phonetic decay, and as to which doctrines, Professor Max Müller has begun to show caution and to enforce it.

It is in what I term the NEGATIVE SERIES that one of the leading laws of prehistoric philology and mythology is to be found.

Under this, the negative no or not is the equivalent of night and black (Niger).

It is also the equivalent of woman, as the negative, man being treated as the positive. So all female names become negative, as wife, Eve, ewe, hound (=bitch), she-goat, cow, mare, etc.

[In another relation, woman becomes the equivalent of the Yona and mouth, and by her periodicity, resembling that of the moon, the equivalent of that body.]

Death, kill, executioner, have negative relations.

So have egg and nit, and secondarily pea, bean, and nut (as resembling an egg). Ear and head appear to be negative.

Cloud is a negative, and that is why, in modern verbal mythology or solar myths, it is found to conform with cow, as it may conform with any negative or female negative. Nephelē, in mythology, is one of the forms of Khavēh or Eve.

Shadow is a negative, and in some cases equivalent to soul and night.

In Guarani, there is an ingenious distinction between the soul of the living and the dead; and so of a head, bone, skin.

The soul of the dead man is supposed in many countries to lodge in birds.

This may be one ground why the bird is negative as bearing the soul of the dead.

Blood is a negative apparently as related to death.

Hence red is a negative, and some curious mythological and archæological conditions arise, for red is likewise the equivalent of the number two.

Dr. Zerff informs me that red was the second colour in various positions, as on dice, and on temple terraces, but this requires closer investigation.

Mr. Park Harrison and Mr. Jeremiah, jun., have observed the use of red as a colour widely prevalent in the regions now under consideration for the purposes of this investigation.

The virtue of red as a preservative against the evil eye is referred to in Walter K. Kelly's "Curiosities of Indo-European Traditions and Folk-lore" (p. 147). In Buchan, Aberdeenshire, the housewives tie a piece of red worsted round their cows' tails before turning them out to grass for the first time in spring. It is, however, better shown in Germany (p. 229), where herdsmen lay a woman's red apron, or a broad axe covered with a woman's red stocking, before the threshold of the cow-house, and make the animals step over it. The bringing together of woman, cow, and red is noteworthy.

The lady-bird seems to hold its place in folk-lore as being red (p. 95). It is held unlucky to kill a lady-bird in Germany, as the sun would not shine the next day.

It is possible that the robin redbreast owes his mythical place to the same characteristic, and it is also unlucky to kill him.

The woodpecker has a red head or mutch (p. 86) and a black body.

Bad is negative, as is naked.

Sleep and dream are negatives, as belonging to the night series.

Salt is negative.

Water in some senses is a negative, and appears to be connected with woman.

Night was the negative of day on the closing of the eye, and it had its own world of darkness, with its night sun, its sleep and its dreams. It was the domain of shadows and the ultimate refuge of the soul. Its mythological relations in this respect will best be studied in the treatment of animism by Mr. Tylor.

There are few prehistoric, protohistoric, or historic languages which do not display the Negative Series. Among such may be named: — Wolof, Agaw, Vasco-Kolarian (very marked), Ugrian, Egyptian, Sumerian (very marked), Dravidian, Semitic (not strongly marked), Aryan (very marked).

For Aryan, a popular illustration is afforded by Not, Night, Nut, Nit, Naked, Nest, Snow, Eve, Ewe, Egg, Wife, Cow, Nox, Nix, Nex, Nux, Nec, Non, Nudus, Nidus, Nodus, Niger, Nubes, Ovis, Ovum, Avis, Uva, Caput, Auris.

The way in which the negative roots are distributed among the various branches of a class is peculiar and affords a distinction.

Thus, Latin uses N largely, and O (KR) sparingly; Greek, M, O largely, and KR or KL sparingly. Thus Aymara uses P, K, H; Mon uses P (sparingly), K, H (sparingly) and T.

In reality the dissyllables are chiefly the same, for the O (ovum, oon) is nothing but the K, B and KB of the Vasco-Kolarian, and Sumerian Gaba, Paka, and the KR (Karua, Auris, etc.) that of the Sumerian Raka.

The words for woman as Khaveh, Eve, Agave, Hebe, Nephele, Wife, have descended through ages as the formula for verbal mythology, and hence figure so largely in the earliest records of Genesis, in the traditions of the Eastern Mediterranean, and among the Aryans.

A sufficient example will be afforded by the following:—

NEGATIVE SERIES.

		Aymara.		Mon of Pegu.
Moon	ab	paksi	b	khatu
Red	ab	pako	ab	hpakit
Two	a	pa, paya	a	pa
Ear	ab	(paoki)	b	khato
Head	ab	phekai	b	katau

NEGATIVE SERIES—continued.

	Aymara.		Mon of Pegu.	
Night	bc	haipu	b	khatan
River	c	hahuirí	a	pi
No, not	c	hani	c	ha
Salt	c	hayu	a	po
Bad			bc	hakha
Bitter	c	haru	b	katan
Black	b?	chamaka?	b	katsau

The chief negative monosyllabic particles are M (Ma) and N (Na, No), and I differ from Mr. Tylor ("Primitive Culture," i, 19) as to their origin being interjectional; and from De Brosses, vol. i, p. 203; and Wedgewood, quoted by Tylor, as to N being a nasal interjection of doubt or dissent.

It appears reasonable to regard them under the new view as being in relation to the Ma or Na forms for mother, when these had been so distributed and applied. Mother being related to woman, stands in a negative condition.

The dissyllable form is largely developed with the negative.

It should be mentioned that a negative is not necessarily a prefix or suffix, but in prehistoric grammar may be intercalated, as in Gondi (Khond), Vasco-Kolarian, and Sumerian Akkad.

It is on this principle, probably, that in many languages we employ a middle negative, with negative verbs, as in Akkad, Turkish, etc., and with auxiliaries in our own and many modern languages.

In Chinese, Pe, which is elsewhere negative and black, means white; and it is possible that in some cases negatives have been made positives to propitiate a good omen.

GENDER is closely connected with the negative relations.

Mr. Tylor has very well said ("Primitive Culture," i, 301) that "the distinction of grammatical gender is a process intimately connected with the formation of myths." In addition to the explanations he has given, account should be taken of the effect of positive and negative ideas in gender.

I concur with him that the gender beyond the masculine and feminine is relatively modern, but this in many cases belongs to the trinary epoch, and is not in its origin a neuter gender, but a common gender.

It is possible that "the high caste or major gender," of Dravidian, including gods and men (Caldwell, Comp. Grammar, p. 172, quoted as above), may be connected with the same phenomena, because the common gender would be that of the chief god.

It is a matter of great question whether, so far as the prehistoric epoch is concerned, the supposed solar and lunar mythology can be effectually applied as an exponent, any more than it can under proper considerations to modern conditions. The

verbal and mythological relation, in the prehistoric epoch, of women to the moon, for instance, is not properly a part of the modern meteorological mythology.

Upon the subject of NUMERALS, there is not the space to enlarge. If numerals are not always characteristic, because they are propagated and borrowed as instruments of culture, they are sometimes very valuable in that respect, as in the case of Akkad, Mon, and Peruvian. There is also much to be investigated as to their structure, other than in the course of the prevalent doctrines.

It has long since been pointed out that the word for man largely constitutes the TRIBAL NAME. Thus we have it in Aro, Ho, Aino, Mru, Minipo, Kuri, Kami, Kumi, Agoo, Singpho.

Black is the meaning of Wolof and Landoma.

Sun appears to be the name for Batta, Apach, Shan, Hayu, Fulah.

Many tribal names are widely distributed. The Mundara and others of Central India appear to be repeated in Central Africa.

The following is a list of some common names:

Asia.	Akush.	Kush.	Africa.
Asia ...	... Akhaioi ...	... Om-agua, etc. ...	South America
Africa...	... Agaw ...	...	...
Asia ...	... Sumer (Akkad) ...	... Aymara ...	... South America
„ ...	... Khmer Kemer (Cambodia) ...	... Quichua ...	... South America
„ ...	... Kissi (Babylonia) ...	... Quiche? ...	... Central America
Africa...	... Batta ...	... Batta ...	... Australasia (Sumatra)
India ...	... Bodo ...	... Abatia? ...	... West Africa
„ ...	... Garo ...	... Yangar ...	... North Africa
East Nepal...	... Magar ...	... Magyar ...	... Europe
East Nepal...	... Khun ...	... Hun ...	... Europe

The comparative mythology requires to be carefully studied on these facts and principles. The distribution of the names for sun, moon, and stars present peculiarities, some of which can be recognised in the old world.

The same type sometimes supplies sun, fire, and day.

A form for moon, largely found in North America, is night sun.

It is from this practice that we may account for the same word occasionally figuring for sun and moon without a distinctive. The male moon had perhaps a relation to the moon appearing during the day.

That eye has been used for sun, as in Indo-China and Australasia we find by Algonkin, Quichua, and Aymara.

Among the Salivi of the Orinoco we find for sun, sky-man; and among the Betoï of the Orinoco for sun, sky-man, and for moon, sky-woman.

Sky-man is possibly found in the Serpa of Thibet in the Sing-

pho, Koreng, Khoibu, Mareng and Laos of the Burmese peninsula.

Having referred to the connection between the new world and the old, which is established by that great department of culture, speech, it would be desirable to deal with race, but that must be left for further examination. Certainly the Esquimaux must be acknowledged, and there are many who will accept the principle of Humboldt that the Mongol type may be recognised in America. To me it appears that in the south, and also in the north, types may be seen that are common to Indo-China, India, and Africa. My study, however, is for the time being that of culture, and not that of the body.

The hair, so much regarded by some as a distinctive, has in America old world representatives.

With regard to skulls I can offer no opinion. That must be left to Professor Busk and his colleagues. At the same time, in this and in other inquiries we shall very probably find a difficulty the distinguished president of the Anthropological Institute has pointed out, and which now impedes the progress of craniology, and that is the want of distinctive characters in skulls of mixed races. In this we shall, however, most likely be ultimately assisted by the progress of other departments of anthropology. At present, even the finding together of long and short skulls affords little valuable material for determination.

The compression of skulls is, as Professor Busk remarks, a phenomenon to be observed around the shores of South America, but it is worth noting that it occurred in Peru and also in the hill parts of Pegu. (Prichard on "Man," iv, 537.)

The whole subject of skull deformities, in reference to America, will be found in Daniel Wilson's "Prehistoric Man," second edition, p. 491, and that of Peru in a paper by him in "Nature," May 21st, 1874, and which was a subject of controversy. It thence appears that such deformities are not peculiar to America, nor characteristic thereof, neither are they characteristic of the Agaw or Sumerian races, but they are worth studying, as they may ultimately furnish evidence.

Mr. Park Harrison refers to the extension of circumcision to Easter Island and Peru. It is distinctly observable in sculptures from Easter Island. Of its eastern extension it is unnecessary to speak.

Circumcision may possibly have some connection with the myth, recorded by Mr. Tylor ("Primitive Culture," i, 334), that in Brazil after a couple have been married, the father or father-in-law cuts a wooden stick with a sharp flint, imagining that by this ceremony he cuts off the tails of any future grandchildren,

so that they may be born tailless. It will be observed that a circumcising instrument is used, a sharp flint.

Mr. J. Park Harrison, who, as stated, has devoted much attention to the various ethnological phenomena connecting the west and the east, has treated among others of the artificial enlargement of the earlobe among various nations, in the *Journal of the Anthropological Institute*, July and October, 1872, p. 190. Cases of this kind are prominent enough among the Indo-Chinese.

Consul Hutchinson ("Peru," vol. i, p. 138 and 139) pointedly refers to an example in a little wooden idol from the Cerro del Oro, and he found others in the museum at Lima (vol. i, p. 321). In Mr. John L. Stephens' "Central America", vol. i, examples may be found at pages 139, 143, 149, 150, 152, 153, and 158. David Forbes refers (p. 41) to the love for great ear ornaments among the Aymaras. It is stated that the Incas only granted permission to indulge in enlarged ear-lobes as a privilege to the Aymaras a long time after their annexation to the empire.

The question of mound monuments is one that must be passed over as one not coming into the epoch we are now engaged with.

In Polynesia the remains of massive stone buildings have been found in Tongatabu, Easter Island, Rota, Tinian, Valan, and elsewhere (Wilson's "Prehistoric Man," p. 109). To these may be added Java, Pegu, Cambodia, Peru, Mexico, and Yucatan.

Among the facts adduced by Mr. Park Harrison for the migration from east to west through Australasia he refers to colossal heads in the east and in Easter Island. Colossal heads will be found in Stephens' "Central America, Chiapas, and Yucatan," vol. i, p. 139, 143, 149, 150, 152, 153 and 328. They have been identified in Babylonia, Cambodia, Easter Island, and Peru.

M. Perrot, under the name of Lydo-Phrygian, and myself, under the name of Lydo-Assyrian, have pointed out the westerly extension of the monuments in Asia Minor, including the Niobe near Magnesia ad Meandrum and the Pseudo Sesostris, near Nymphæ in the Smyrna district. To this may be added the colossal head from the outskirts of Smyrna, found by Mr. F. Spiegelthal, in 1865, and identified by me and brought to the British Museum by Mr. G. Dennis. The name of Lydo-Akkadian is perhaps better for these monuments.

The use of enormous blocks of admirably squared stone, without cement, is a feature common to both continents and deserving of investigation, as well as the mode in which such blocks were quarried and transported. In South America there were no beasts of burthen available. The employment of bricks and

cement, and generally the adoption of the building arts are also worthy of careful examination.

Stephens, in his "Yucatan," vol. i, p. 134, gives a very remarkable engraving of a capital of a column at Uxmal, of old world character.

At Uxmal there are buildings constructed on terraces and mounds, as there were at Babylon (i, 135). This is worth observing for further comment.

Burial towers are to be recognised in Syria, Persia, India, Siam, and Peru.

The knowledge of bronze, goldsmith's work, silver work, and other metallurgy has not passed unobserved by writers. Gold dentistry has been recognised in Peru and Egypt (Tylor, "Early History of Mankind," p. 175).

The employment of bronze in America presents no difficulty under the acceptance of a Sumerian settlement. If the Agaws did not become acquainted with the large tin supplies of Malacca the East Sumerians did, as they were with the working of gold and silver. Hence they readily introduced these arts into America, or rather improved them, because the mound builders were acquainted with copper and bronze working.

Although the Sumerians, as the topographical nomenclature shows, were acquainted with tin in Britain before the Phœnicians, it is probable Malacca, and not Britain, was the great seat of the early supply of tin.

Consul Hutchinson ("Peru," ii, 266) institutes a justifiable comparison between the masonry and pottery of ancient Peru, observed by himself, and the prehistoric discoveries of Dr. Schliemann in the Troad. In fact, if my views are correct of the connection of the Lydians, Phrygians, and Carians of Asia Minor, with the Etruscans and the Sumerians, then there would be a positive identification of epoch and class between the Troad and Peru.

In Peru, drinking cups and other articles were buried with the dead, as in Etruria, etc. The Peruvian cups were supposed to be used for drinking at the funerals (Forbes, 49).

The woven fabrics are also to be noted in connection with Peru and the country of the Thinae or Cambodia.

The quipu or knotted cord, as a record, is found in Peru, Mexico, Hawaii, Polynesia, the Eastern Archipelago, and China (Prichard, iv, 466; Tylor, "Early History of Mankind," pp. 156, 160).

The scape llama referred to by David Forbes (p. 45) may be compared with the scape goat of the east.

Sacrifices of men to the gods were used by the earlier races, as the Dahomans, but it is to be noted that they were a practice

also of the worship of Baal, in Peru and in Mexico (Wilson, "Prehistoric Man," pp. 89, 91, 290), as also in the east.

Von Humboldt long since noticed the connection of the Mexican calendar with the Asiatic and deduced the Asiatic origin of the civilization (see also E. B. Tylor, "Anahuac," 241). The Yucatan calendar is allied to the Mexican. The subject of the calendars and inscriptions, together with Peruvian and Central American languages has long occupied the Chevalier Bollaert, the author of the Peruvian antiquities and of many memoirs, particularly on the Maya alphabet.

The half month in the early Maya or Yucatan calendar consisted of thirteen days (Stephens' "Yucatan", i, 439). The Siamese likewise use as an essential part of a date a half month. This now consists of fourteen days.

The dates in Siamese are arranged on a cross (+). In Yucatan, part of the cycle was placed on a wheel divided into four, practically N, E, W, and S. The two systems show a resemblance, and the cross may represent the spokes of a wheel. The Yucatan calendar, which was the same as the Mexican, has lucky and unlucky days, still a common system in the east. The cross has been found by Dr. Schlemann in the Troad. The square cross is common among the Aymaras (Forbes, 39), and was observed by Stephens in Central America.

The red hand seen in the monuments of Yucatan (Stevens) Bollaert says he has seen as far south as Arica in Peru ("Anthropology of the New World," 114).

Chewing vegetable substances, so well known in the east, takes place in Peru with coca. David Forbes also observes that besides eating clay the Aymaras and Quichuas mix ashes of wood on plants with the coca leaf, and that this is like the Asiatic practice of adding lime to the betel nut, being in both cases for the purpose of setting free the vegetable alkaloid of the plant (p. 59). The coca was anciently offered on the altar of the gods, and now on the altar of the Virgin.

The Honourable Mr. Clay points out that the umbrella was a mark of dignity among the Peruvians, as it was in Babylonia, and is still in the Indo-Chinese countries.

PART II.

THE CONNECTION OF CULTURE IN ASIA AND AMERICA.

The affinities of grammar between the new world and the old, though dealt with by various writers, as in the "Mithridates," were only scientifically treated by a few, as by Humboldt, the Rev. Richard Garnett, and Dr. Daniel Wilson ("Prehistoric

Man," p. 594). Characters common to the Polynesian had been recognised, but Mr. Garnet pointed out that besides these others were to be found common to the languages of the Dekkan in India.

On the other hand, Dr. Oscar Peschel, in his "*Volkerkunde*," 1874, p. 472, still maintains that the culture of Peru and Mexico was indigenous.

Mr. Tylor also ("*Early History of Mankind*," p. 209) says "No certain proof of connection or intercourse of any kind between Mexico and Peru seems as yet to have been made out." This expresses the state of prevalent opinion, and although the materials for linguistic investigation are abundantly displayed in Dr. Latham's valuable "*Elements of Comparative Philology*," such opinion has been little contested. In fact, although the languages are allied, yet that alliance has to be demonstrated from the outside, and until the disinterment and decipherment of the Sumerian or Akkad inscriptions, it was almost impossible to be proved.

The Aymara and Quichua languages of Peru, the Aztek of Mexico, and the Maya of Yucatan, are all allied with the Indo-Chinese, and thereby with the Akkad as Sumerian. Even to the Negative Series and numerals the points of resemblance are remarkable. Some of these resemblances between Akkad and Quichua had, on the perusal of M. Lenormant's works, struck Señor de la Rosa, a distinguished Peruvian scholar, and on the reading of this paper at the Anthropological Institute he referred to several examples lying on the surface. He also referred to resemblances between Quichua and Semitic and Aryan. These I treated as resulting from the influence of Sumerian and the older languages, as Semitic and Sanskrit.

In Peru and Bolivia the chief languages now are the Quichua or Inca, and the Aymara.

Of the AYMARA a copious and valuable memoir was, on 21st June, 1870, communicated to the Ethnological Society (parent of the Anthropological Institute) by David Forbes, F.R.S., and this constitutes a text-book.

The language of the Aymaras is spoken in southern Peru and northern Bolivia. They were conquered by the Incas. The Quichua is spoken in northern Peru and southern Bolivia.

The Aymaras claim to have been a great people before the Inca conquest (1100), perhaps beyond any South American people. Ruins of grand palaces and temples remain at Tiahuanaca on the south of Lake Titicaca (Forbes). Tiahuanaca was the capital of the Aymara land. The conquest of it was completed in 1289, but was followed by serious revolts.

Forbes says, too, (p. 4) that, according to Indian traditions

from Aymara as well as Quichua sources, the Aymaras, even before the time of the first Inca, Manco—Capac (1021-1062)—possessed a degree of civilisation higher than that of the Incas themselves. Consul Hutchinson maintained before the Institute a like doctrine as to the Chinooks.

The Aymara is related to the Quichua, which was the governmental language of Peru under the Incas. Among people devoted to the worship of the Sun it might be expected the word for Sun would be remarkable, but so it is only in one respect, that the word *Inti* is the word for Eye in the African Danakil. It is one canon in prehistoric philology that Eye and Sun are permutable, because the Sun was called the Sky-eye.

The Aymara, etc., resemblances to Danakil, Shiho, and Adaiel of North-east Africa are thus shown:—

	Peru.			Danakil, etc.
Eye ...	... <i>naira</i> —Aymara	...	Sun ...	... <i>aero</i>
Sun . .	... <i>inti</i> "	...	... Eye ..	... <i>inti</i>
Head ...	... <i>uma</i> , <i>homa</i> ..	...	... Head	... <i>ammo</i>
Nose	... <i>cenca</i> , <i>cinga</i> Q	...	... Nose	... <i>san</i>
Ear ...	... <i>paoki</i> "	...	... Ear ..	... <i>okua</i>
Star...	... <i>silla</i>...	...	... Moon	... <i>alsa</i>
Day...	... <i>uru</i> ... "	...	... Day . .	... <i>erra</i>

The eye of the Aymara, says Forbes (p. 14), has the central line very slightly inclined inwards, not nearly so much as in the Mongol, yet not altogether horizontal as in many of the Chinese. An approximation to this form of eye is observable among the Indo-Chinese, but then it must be noted that it is also found among the Guaranis of Brazil.

Forbes (p. 12) says, that "the figure given in 'Smith's Natural History of the Human Species' of an Indian of the Otto tribe in North America is almost an exact likeness of Conduri, an old Aymara man some time in my service."

Although Tschudi attributes the elongated skulls to the Incas, it was, as Forbes points out (p. 13), to the Aymaras that belonged the skulls found near Lake Titicaca. The Aymara language is nearest to the Peguan, and it is in Arakan, near the Peguan area, that among hill tribes the system of flattening the skull is now practised. (Prichard on "Man," Vol. iv. p. 537).

With regard to the hair of the Aymaras, it is extremely abundant and long in the man as well as the woman. It is of a deep black-brown or black colour, perfectly straight, without any attempt to curl (Forbes, p. 14). It is noticeable that the men wear their hair drawn backwards over their heads, and plaited into a long pigtail. This practice corresponds with

that of Asia. Forbes notes that the women have two pigtails. This appears recognisable on Etruscan and some archaic monuments of the west. The men are proud of their pigtails, and Forbes believes introduce false hair. This is done in China. Cutting off the pigtail is as there the severest punishment (p. 44).

The Aymara and Quichua Indians are noted for their character of submission to authority, enabling them to be used for the foundation of a great empire, and this is a feature of the Indo-Chinese people.

The Aymara area has been supposed to be limited to that now occupied, but it is to be observed that the names found in the neighbourhood of Lake Titicaca are much better developed in New Granada. It is therefore evident that the Aymara, or perhaps pre-Aymara, occupation must have extended so far north. Mr. Clements Markham considers that the Inca empire never reached so far northward, and Mr. Forbes was not aware of such an extension of the Aymara as must now be allowed for.

Aymara is possibly the equivalent of Kemer or Khmer, the name of the Cambodians, and of the Sumer—the name of the people connected with Accad.

QUICHUA in Peru and Quiché in Mexico may represent the Kissii or Cissii near Babylon; and these may be connected with Cush and Akush. Of the Quichua or Inca language and people it is not necessary to say so much, as they are more familiarly known, and have been and will be incidentally referred to.

To the Quichua language Mr. Clements Markham has devoted himself, and produced a grammar and dictionary which have been of very great service in these investigations. I have also employed the *Arte* of Torres Rubio, on which his grammar is founded. This work of Mr. Markham's is likely to be of more importance even than he anticipated now that Quichua and Aymara must be studied for the comparative grammar of Akkad. Señor de la Rosa and Señor Pacheco are engaged on new Quichua Grammars.

Consul Hutchinson, who has given so much labour to the prehistoric archeology of Peru, places the CHIMOOS before the Quichuas in Peru; but I have no specimen of the language.

The AZTEK culture of Mexico, as Humboldt well saw, was derived from the old world, as was its language, which is to be classed with Sumerian, but intermediate between Aymara and Otomi.

The Otomi, Cora, and Tarahumars, with perhaps the Huasteca, constitute a class under Sumerian influence, but allied with the Adighe or Circassian, which likewise exhibits Sumerian influ-

ence, and has a remarkable but distant resemblance with Etruscan.

In the Circassian I had long since traced what are called North American characteristics, and others I found in the Georgian, but the cause was unknown to me till of late. A considerable influence must have been exerted by the Agaw and Otomi migrations on the Indian languages of North America.

The presence of the Circassian-Otomi has to be accounted for. The higher Sumerians are marked as city-building people, but the Circassian in the Caucasus is what the Otomi is in Mexico. The Otomis must have preceded the Sumerians in South America or been driven forward by them, as the Agaw-Guarani were into Brazil. The Otomis may have had connections or dealings with the monument-building races of North America. At a later date, on the Sumerian kingdoms in Mexico becoming weaker, they returned and invaded Mexico.

Dr. Latham ("Opuscula, Essays," 1860, p. 395) gives "the result of a very hurried collation," for the Otomi, "said to be "with the languages akin to the Chinese *en masse*" (p. 397), and for the Maya (p. 398). The latter list is chiefly of Aztek words. He makes no remarks, but the tables show many affinities with Tonkin and Cochinchina. Had Dr. Latham followed this up he might probably have obtained the clue to the relation of the Mexican languages, though he might have been baffled, as some of the affinities can only be illustrated by bringing together the Quichua and Aymara as members of the group, and the Akkad then undeciphered. It is, in fact, now a part of the evidence that Humboldt, Garnett, Latham, etc., are found to have contributed material for the true solution.

The history of Mexico is supplied from accessible sources. Its best known language is the Aztek. On the preceding Toltek I can throw no light. The monuments and culture of Mexico may, after the reference already made to them, be passed over. Suffice it to say, the monuments are of great dimensions and highly decorated.

Yucatan possesses similar remains described by J. L. Stephens. The MAYA, a language formerly cultivated, comes distinctly within the Sumerian class.

In "Incidents of Travel," by J. L. Stephens, in Central America, Chiapas and Yucatan, in vol. ii, are hieroglyphics, which are arranged in rows, and appear to present some of the principles of the cuneiform or hieratic, as ||| || ||| ||||

□ ||

The same is to be observed at Palenque, ii, 342 and 424. These latter present even more resemblance to the Hamath

inscriptions, as ① ②, also the extended arm (see also Hissarlik and Easter Island) is worth further examination.

The square hieroglyphics, or rather squares of hieroglyphics, found in Central America, are most probably only a modification of the row or column of hieroglyphics in the Yucatan and Hamath, and which has a representative in hieratic cuneiform. The carvings on the rocks at the Yonan Pass, in Peru, engraved by Consul T. J. Hutchinson ("Peru," ii, 174, 176), are deserving of study. Some of the characters are ideographs, but some likewise present a resemblance to Hamath and other characters; and Easter Island inscriptions deserve attention.

The question may be incidentally considered whether the Sumerian population of Indo-China was supplied from Babylonia or the common centre in High Asia. In my view it was from the common centre, because although there are great affinities between Sumerian or Akkad and its eastern analogues, yet there are greater affinities between these, and there are common points of dissimilarity from Sumerian. There were most probably two migrations of Sumerian in succession to the Agaw. One embraced the Akkad, Mon, Cambodian, Ay-mara, and Maya (and Toltec?). The other, the Georgian, Etruscan, Siamese, Quichua, and Aztek. The earliest may, however, have been the Circassian Otomi.

Mr. Park Harrison strongly maintains that civilisation must have had a passage from the Old World to Peru by Easter Island, and he has brought the subject before the Anthropological Institute and the British Association. The phenomena here described of the distribution of population in South America greatly favour this view. There were, however, looking to geographical circumstances, probably two routes by the northern and southern islands and currents, and these may have effected the collocation of the various populations.

Proceeding onwards, INDO-CHINA, or the southern districts of the further peninsula beyond India, may be treated as one linguistic area. They include Pegu in the west, Siam in the middle, and Cambodia in the east. This region was known to the ancients as being held by populations in a state of advancement.

Pegu is the country at the mouth of the Irawaddy, and was formerly independent, but fell under the dominion of the Burmese empire. In 1852, the province, with the towns of Pegu, Prome, and Rangoon was taken by the English. The people call themselves Mon, but are called Talaïn by the Burmese. The language is a most valuable member of the Sumerian for illustration. There are large ruins.

Siam lies in the middle of India, beyond the Ganges, and is the seat of a great and settled empire. The Siamese people

and language are, however, of less importance to us in this inquiry at this period than are the others.

Kambodia, or Kamboja (Kan-phu-cha, Chinese), is the western part of Annam or Cochinchina on the Saigong and Kambodia rivers, borders on eastern Siam. Of late years it has been attacked by the French, who have taken and hold Saigong.

The great marble ruins of the ancient capital of the Thinaë, near Saigong have long been known. The Kambodians were remarked by the early Arab voyagers as manufacturers of very fine linen. The natives call themselves Kammeren Khmer (=Aymara). Kitaya, too, or Indo-China, may be equivalent to Kissii, or Cissi, and to Quichua. It is to be observed that the explored monuments of Kambodia are not ancient like those of Babylonia, but rather modern and synchronous with those of Peru and Mexico, but it is probable earlier remains will be found.

Kambodia has been studied by M. Mouhot, by M. Garnier in his large and valuable work, and lately by Mr. Kennedy, in his paper read before the Indian Section of the Society of Arts (Journal, 1873-4), when I presided, and had the opportunity of giving some early explanations of the linguistic relations as recorded in the Journal of the Society.

The ancient kingdom of Kamboja, in INDIA, which gave name to the Gulf of Kamboja, or Cambay, has engaged the attention of Indian archeologists, but not to the degree its importance merits. In the later history of this kingdom it was still considerable, but it was the representative of an ancient and perhaps the earliest civilisation of India, belonging to that epoch, which was universal, of which General Cunningham has found the examples.

The river names of India are repeated in New Granada on the one hand and in Etruria and Italy on the other, in conformity, as I stated in a note sent to the International Congress of Orientalists (N. Trübner). The town names obey the same law. It was from India and not from Babylonia that we may, as said, assume that the stream of civilisation passed towards the Pacific, and in India will yet be found the origins and remains of early letters, the influence of which to this day will still be recognised. The two names of the hundred-streamed feeder of the Indus, *Hesudrus* (100, Georgian), and *Zadudrus* (100, Sanskrit), are worthy of note as also *athasi* (1,000, Georgian), and *athasi* (88 Hindustani).

The AKKAD, or SUMERIAN, must be looked upon as a main stock of the class. Of the cuneiform inscriptions, the Assyrian and the later Persian had been deciphered, while an early type, named after the kings of Accad, remained obscure. Mr. Oppert supported a non-Semitic and non-Aryan interpretation, and

by the help of the Rev. A. H. Sayce and Mons. F. Lenormant, many of the characters have now been read, and the language is disclosed to the world.

What that language may be has been hitherto a matter of dispute. The chief authorities upon it have shown many relations with Vasco-Kolarian and Ugric, while I have confirmed my own forecast (*"Journal of the Anthropological Institute,"* 1871, pp. 53, 58) that it would be found to have Georgian affinities, and to belong to a Palæo-Asiatic class. I am now, however, able more distinctly to assign its position, by showing that, whatever its other affinities may be, it is closely connected in language with the former monument and city-building races of the Old and New World.

In the tenth chapter of Genesis, Accad is brought into the scheme of classification under the family of Ham. "The early kings of [Chaldea] entitled themselves rulers of Sumiri and Accad" (Sayce, *"Journal of Philology,"* vol. iii, 1). Dr. Hincks, on the strength of inscriptions belonging to Accad, had proposed for the language the name of Accad, but Mr. Oppert directed attention to the fact that the people called themselves Sumir or Sumer, and urged the adoption of the term Sumerian. This appears worthy of support from the nature of allied forms. Samaria, a holy city and country, Semirus in Armenia, and Seumara in Iberia, are perhaps forms of Sumer. Raamah and Roma would be conformable. Armenia belongs to the same stock and epoch.

Smyrna (Smurna) and Samorna, of Ephesus, may also be assigned, as may be Asmurna of Hyrkania and Zimura of Aria. Ephesus and Smyrna must have been great seats of Sumerians. There we have Mount Sipylus (Sipula), with the Suburu or statue (Akkad) of Niobe. Near is another Lyde-Sumerian sculpture, the Pseudo-Sesostris of Nympha. Near Ephesus is Pygela or Pugela (Pucala, Pucara, the castle), the R changing to L in this district.

It is to be observed that, besides the cuneiform, wedge-shaped, or arrow-headed, there is an earlier character of the Akkad people, to which Mr. Oppert has given the name of "hieratic." In my opinion the Hamath inscriptions of Syria are to be deciphered on this basis, and the Maya of Yucatan has apparent resemblances. If this be the case we may look for inscriptions of the Akkad period, if not class, in the buried cities of India. It was long since pointed out by me that there were early alphabets, independent of Phœnician, and springing from the basis of the hieratic and arrow-headed, and I referred to || being used in arrow-headed, and the Libyan of Thugga for Son, to the probable connection of †, Hamath, * hieratic, and ⚡ Hebrew,

with Cypriate, and to other characters common in Warka, Cypriote, Hymyaritic, and Albanian. The passage of an alphabet from Babylonia is now acknowledged through the discoveries in Cypriote and at Hissarlik. I attribute the Celtiberian characteristics to a like origin.

The GEORGIAN languages afford an interpretation of some of the terms of the pre-Hellenic topographical nomenclature of the Old World. These languages now include the Karthueli or Georgian, the Swan, the Lazian of Asia Minor, the Mingrelian, etc. One ancient representative appears to me to have been the Canaanite.

While the names of rivers and places are uniform in Asia Minor, the few remains of the language and inscriptions, except the Lycian, which is most likely Lesghian, appear to conform to a Canaanite or Georgian standard. To this, in compliance with ancient tradition, the Etruscan is by me annexed, as it was in 1870 and 1871 ("Journal of the Anthropological Institute," pp. 56, 58), although it must be stated that my materials of interpretation have as yet been scanty. The Rev. Isaac Taylor, who has published a book on a Ugrian hypothesis of Etruscan, at the Congress of Orientalists produced a further paper as to the connection of Etruscan with Accad, which is based upon and confirms my views. In illustration of the general connection, and of the interesting question of Etruscan, Tables I and II may be referred to.

One source of Etruscan, as of some other extinct languages, is to be traced by the same process of "survival" as in all anthropological departments. Latin will, when duly worked by analysis, form a rich mine.

SURVIVALS OF ETRUSCAN IN LATIN.

Goat ...	...	capra	...	...	...
Spring	...	scaturigo	...	...	tsqori, Georgian
	...	scatebra, etc...	...	...	tsqaroni "
Sieve ...	...	cribrum	...	...	tskhrili "
Old ...	...	vetus	...	...	azvili "
Straw, pipe	...	stipula	...	...	thskepli "
Seat ...	...	scabellum	...	...
	...	scamnus	...	...
Crime ...	...	scelus	...	...	tsodva "
Brush ...	...	scoptetus	...	...	tsetskhi "

While Canaanitic and Hamath come within the Hamitic scheme of Genesis, and are so far allied to Sumerian, which their character of culture supports ("Journal of the Anthropological Institute," 1871, p. 58), yet there are divergences of language and of culture so great that I cannot but regard the Canaanitic, Lydian, and Etruscan, as constituting a distinct

TABLE I.

	Etruscan.	Georgian.	Others.	America.
Boy, son	... agalator maris ... puī ? kapra ... Ape ... Eagle ... Hawk ...	... shwili (akhali, young) krma ... bichi ... boshi ... tkhavi ... [iremn, stag] artshiri ... kori (vulture) archaḡi (pelican) buzi (dy)... saawat ... ikvi (duck) ... (nitheli, dark) chaclikani ... shavi ... kardzi ... mi ... (shweli, child) qwar, love; shur, desire tsotskhli, fire quna ... thesan...	... chvalay, Circas bosheth, Canaanite ... khapa, Mon vounafay, Circas ... zal, Accad ... la, Burman shoouseh, Circas ... atta, Circas, high mu, Akkad tuna, Akkad, dawn	... akun, Mexican ... butsi, Othomi ... paka, Peruvian ... kondori, Quichua, Peruvian ancuna, Quichua; eagle, Peruvian andvni, Misteca sillo Aymara (star) Peruvian citlali, Aztek llanta, Peruvian ... qa, Quichua, Peruvian tleti, fire, Mexican kana cut, Aymara, Peruvian
Goat
Boetle
Swan
Crane
Heaven
Apollo
Diana
Ghost, shadow
Helmet
Black
Brown
Strong
I, me
And
Born
Quipid
Vulcan
Make, work
Aurora

TABLE II.

	Etruscan.	Georgian.	Akkad.	Circas.	Camb., etc.	Canaan.	Peruvian.					
1...	makh	...	—	—	moe	...	—	mai				
2...	thu	...	—	—	oh	...	—	yscay				
3...	zal	...	sami	...	essa	...	shee	...	htsan	sam	...	kimsa
4...	huth	...	othkhi...	—	—	—	—	—	—	—	—	ttahua
5...	ki, kiem	...	khuthi...	—	—	—	—	—	—	—	—	—
6...	sas	...	ekusi	...	as	...	shoa	..	sau	...	—	sojta
7...	be(m)ph	...	shwidi...	—	—	—	—	—	—	—	—	pakalko
10...	alchl?	...	—	—	—	—	—	—	—	—	—	kalko

branch, at present to be assigned to Sumerian, but perhaps afterwards to be sub-divided.

In the following illustrations the same characteristics as in Etruscan are to be found:—

	Asia Minor.	W. and E. Asia.	America.
Earth	... gissa, Lydian	... yatta, Circas; Khsach, Cambodian]	
Water	... vedu, Phrygian	... pseh, Circas; pi, Mon labtayeh, Huastec	
Rock	... taba, Carian	...	tepe, Aztek
Garden	... ganos, Phrygian	... kana, Georgian; gana	
		Accad	...
Village, town	... deba, Thracian	... daba, Georgian	... deba, Guarani
Fat, oil	... pikerion, Phrygian	... pshey, Circas; pa?	
		Accad	...
Sheep	... ma, Phrygian	... maylley, Circas; me	... raccu, Quichua
		(goat) Cambodian	... llama, Peruvian
Horse	... ala, Carian	... [la, animal syllable,	
		Accad]	...
King	... gala, Carian	... ungal, Accad	...

Hamath, or some such local metropolis, most likely afforded the centre of a distinct development of civilisation, with trinal forms of language and mythology, and producing syllabic and alphabetic characters, afterwards attributed to the Phœnicians.

Georgian and Akkad have double plurals, the remains of a prehistoric characteristic, and there are resemblances in the verbs and numerals, but there are dissimilarities. As already written, the Georgian double plurals -ni and -bi figure as third personal pronouns in Akkad. These particles are not without resemblance to negatives.

At an early period of the examination of Georgian, I was much struck with the propensity for sticking in or inserting consonants, as in Mexican and other languages. The immediate explanation of the *tl* in Mexican is, however, to be sought in Circassian. In Georgian it is perhaps *th*.

The exact affinities of Georgian are not shown by the existing members of the Sumero-Peruvian class. Some are found in Ka, a language allied to the Indo-Chinese group, and some in Cambodian. Georgian is evidently related to Etruscan. Thus—

Head ...	... thawi, Georgian	... tuwi, Ka
Mouth	... piri	... soar "
River ...	... mdinare...	... daktani, Ka; tanle, Cambodian
Rock, mountain	} tma	tamoe "
Stone ...		

The elements of Georgian are found in the numerals 1 erthi, G (trao K); 2 ori (bur); 3 sami (tam); 4 otluki (chin); 5 khouthi (ka); 8 rwa (peh); 9 tsKHRatsar (Khong).

Ka is found for 5 on the left-hand in Mon.

The Georgian numerals equal the left-hand Mon and Ka numerals.

COMPARISON OF AKKAD AND GEORGIAN GRAMMAR.

	Akkad.	Georgian.
= Nouns more than one plural		
= Emphatic form ending in a vowel		
= Negative series
= Formation of persons of verbs		
= Formation of participle		
= Formation of negative verbs by the prefix Nu		
= Resemblance of numbers
= Insertion in verb of pronouns governed		...
= Use of postpositions
= Use of Ni, Bi
= Use of M and S		Na

The following tables show the comparison of Akkad:—

COMPARISON OF AKKAD AND QUICHUA GRAMMAR.

	Akkad.	Quichua.
NOUN, emphatic state—a		None
„ Dual=2 (kas)		Dual regarded=2 (pura)
„ pronouns postportional	=	
„ several plurals	=	=
„ pl—ene	=	-cuna -ntin
„ —mes		
„ plural by duplication	=	
„ locative—ta	=	-ta, through
„ ablative—na	=	-nae, wanting
„ opportune—gal	= ?	-ceepi (after, behind)
VERBS, governed		persons not the same
„ pronouns incorporated	=	
„ plural—une —ne	=	-un ?
„ —mus—s		-chie
„ gan to be, exist	=	can, to be
Noun		numeral used without plural
Adjective after noun		before noun
Pronouns S. 1 ? 2 ? 3, two forms		
Pl. 3	=	
„ Demonstrative some resemble	=	
Conjunction Cama, with, and	=	cama. according as
Numerals, many	=	all
ordinals—kam	=	-nequen

Referring to affinities of language, the town of Eten in Peru is said to have a peculiar language, and it is asserted that the population can converse with the Chinese labourers. This state-

ment has been quoted by Mr. Clements Markham, and is denied by Consul Hutchinson ("Peru," vol. ii, p. 202), who visited Eten. As the Consul does not give any Chinese, or any specimen of the language, it is difficult to decide. He quotes Mr. Stevenson as saying that they speak Chimoo. If this language is allied to the other cultivated languages of Peru, then some numerals and a few other words may resemble Chinese and give foundation for the report.

It will be seen that the resemblance to the Indo-Chinese is such as to give an explanation of many of the supposed cases of connection with Chinese. One of the best examples of supposed linguistic resemblance to Chinese was given by Mr. Stephen Powers in the "Atlantic Monthly" for March, 1874, p. 321, with regard to the Gallinomero. These are tribes on the north-west coast of America, near Healyburg, on the lower reaches of Russian River. The identification is, however, inconclusive, because Gallinomero is allied to Khwakhlamayü, and that again to Kulunapu, which again is a branch of the Yuma class. Mr. C. G. Leland has undertaken to publish an account of the Chinese intercourse with North America.

	Gallinomero.			Khwakhlamayö.		Chinese.
1...	... ehah	...	...	—	...	yih
2...	... ako	...	...	—	...	ar
3...	... sibbo	...	...	—	...	san
4...	... metah	...	...	—	...	se
5...	... shuh	...	...	—	...	wu
6...	... lancha	...	...	—	...	luh
7...	... latko	...	...	—	...	tsih
8...	... kometah	...	...	—	...	pah
9...	... chapko	...	...	—	...	khi
10...	... chasuto	...	...	—	...	shih
Fire	... oho	...	...	—	...	sho
Dog	... hiyu	...	...	—	...	kinen
Day	... majih	...	...	—	...	jih
Eye	...	—	...	iiu	...	yen
Mouth	...	—	...	aa	...	hou
Hand	...	—	...	psha	...	shen
Foot	...	—	...	sakhi	...	kio
Wood, log	... moosu	...	...	—	...	muten
Great	... bata(ta)	...	...	—	...	ta
Du, make	... tseena	...	...	—	...	tso
Sun	... ada	...	...	—	...	yat
Strength	... cha	...	...	—	...	chelih

The resemblance of the names of places is very deceptive, but that between the names of Peruvian and Yucatan places and Old World nomenclature is so striking as to require record, and it suitably follows the linguistic portion. In fact, there is scarcely a Peruvian or Maya name which cannot be at once dealt with; but Mexican is more refractory. The nomenclature of India within and beyond the Ganges, of Babylonia, of

Etruria, and Italy, and even of Britain, is reproduced or represented in South America.

The Rev. Mr. Sayce states ("Journal of Philology," 1870, vol. iii, p. 45) that "a continuation of W. Von Humboldt's researches in local names has extended the range of the Basque across the south of Europe as far as Asia Minor, and the sub-family thus formed may conveniently be called "Iberian." This is an error in which I have shared, as W. Von Humboldt includes many names in Spain as Basque which are not so, and the names so spoken of may be found in India or Peru.

The following shows the river names of New Granada in comparison with India and Italy (Etruria):—

New Granada.	India, etc.	Italy, etc.
Cane ...	... Cainas ...	...
Guayabera ...	... Chaberis ...	...
Guape ...	... Kophos ...	...
Cusiana ...	... Acesines ...	... Casuentus
Catarumbo ...	... Catabeda ...	...
Cibao ...	...	... Gabellas
Garigoa ...	... Gouraios ...	...
Cauca ...	... Cacathis ...	... Caicus, A. Minor
Ite ...	...	... Utis
Humedeas ...	... Namadas ...	...
Lengupa ...	...	... Longinus
Ariguani ...	... [Rhogomanus, Persia]	... Rigionum
Meta ...	... Andomatis ...	... Medoakus
Margua ...	... [Margus, Margiana]	... Nikia, Nato
Nachi ...	...	... Nar, Nure
Nare ...	...	... Anapus
Napiapi ...	...	... [Enipeus, Macedonia]
Neusa ...	...	... Anassos
Upia ...	...	... [Nessos, Macedonia]
Paute ...	... Spauto, lake ...	... [Abus, Britain]
Togui ...	... Tokosanna ...	... Padus
Tamar ...	... Tamarus ...	... [Boëtis, Spain]
Tachira ...	... [Tamyrus, Syria] ...	... Togisonus
Tiguanaqui ...	...	... Tamarus
Tumila ...	... Temala ...	... [Tamaros, Britain]
Onzaga ...	...	... Ticarios
Zulia ...	...	... Digentia
Suta ...	... Sadus ...	... Sekies
Sarare ...	... Serus ...	... Silis, Silarus
Suarez ...	... Sarabis ...	...
Sisigua ...	... Suasius ...	... Sarius
Semindoco ...	... Tokosanna ...	... Siris
Sumapia ...	...	... Esurus
Sichiaca ...	... Sittokakis ...	... Sossius
Sube ...	... Sobanus ...	...
Sinu ...	... Sapara ...	... Sumathus, Sicily
	... Sonus ...	... Sekies
		... Sabis
		... [Asopus, Greece]
		... cinnus
		... Asinarus, Sicily
		... [Sonus, Hibernia]

Other river names are—

America.	India and East.	West.
Caca, Bolivia ...	.. Cacathis, I.	... Caicus, A. Minor
Cachy, Peru ...	...	Caicinus, Italy
		Cæcina, Italy
Chira, Peru ...	...	Akiris, Italy
Curaray, Peru ...	...
Aguan, C. America ...	... Kainas, I.	...
Ulua, C. America ...	...	Ollius, Italy
Guapai, Bolivia ...	... Kophos, I.	... Gabellus, Italy
Montagua, C. America ...	...	Mitua, Macedonia
		Modoacus, Italy
Mira, Ecuador ...	...	Merula, Italy
Marona, Ecuador ...	...	Himera, Sicily
Mayo (river name), Peru, Mexico ...	... Mais, I. ...	...
Mantaro, Peru ...	... Manda, I.	... Munda, Spain
Mapiri, Bolivia ...	... Mophis, I.	...
Lempa, C. America ...	... Lombare, I.	... Lambrus, Italy
Lacantum, C. America ...	...	Alukus, Italy
		Helicon, Italy
Nasas, Mexico ...	...	Anassus, Italy
Nape, Ecuador ...	...	Anapus, Sicily
		Enipeus, Macedonia
Pita, Ecuador ...	... Catabeda, I. extra	... Padus, Italy
Piti, Mexico ...	...	Bœtis, Spain
Putu (mayo) Ecuador ...	... Spauto [lake]	... Pitonus, Corsica
Panuco, Mexico ...	...	[Benacus (lake), Italy, N.]
Babo, Ecuador ...	...	Bæbe (lake), Greece
Babispe, Mexico ...	...	Fevos, Italy
Paso (mayo) Peru ...	... Hyphasis, India	... Pesus, A. Minor
	Phasis, Colchis	..
Yapura, Ecuador ...	...	Hipparis, Italy
Rimac, Peru ...	...	Rubiko, Italy
Arispe, Mexico ...	... Zariaspis, Bactriano	..
Sirama, C. America ...	... Serus, India	... Siris, Italy
Ohosura, Mexico ...	...	Æsurus, Italy
Samala, C. America ...	... Sabalaessa, India	...
Sintalapa, C. America ...	... Sandabalus, India	... Sontinus, Italy
Usumasinta, Mexico ...	...	Ossa, Italy
Sumbay, Peru ...	... Sambus, I.	...
Zacatula, Mexico ...	...	Sekies, Italy
		Tolenus, Italy
Tepitapa, C. America ...	... Attabas, I.	... Tobios, Britain
Tabasquillo, Mexico ...	... Tava, I. ..	... Tavis, Italy
Tambo, Peru ..	...	Timavus, Italy
Tula, Mexico ...	...	Tolenus, Italy
Dauli, Ecuador ...	...	Tilurus, Illyria
Tamoin, Mexico ...	... Temala, I. extra	... Tamion, Britain
Yavari, Peru ...	... Chaberis, India	..
Ica, Peru ...	...	Axios, Macedonia
Huasa, Peru ...	...	Æsis, Italy

With regard to lake names, they appear to be related to river names—

Lakes—America.	Old World (R) River.
Parras, Mexico ...	... Prasias, Thessaly; Prasiane, India, W
Patzcuaro, Mexico ..	... Gouraios (R), India
Chapala, Mexico ...	... Copais, Bœotia

America—Lakes.		Old World (R) River.
Fuquene, Mexico ...	...	Fucinus, Italy, Sabine
Peten, Central America ...	...	Pitanus (R), Corsica
Amatitan, Central America ...	...	Andomatis (R), India
Tamiagua, Mexico ...	...	Tamion (R), Britain
Titicaca, Peru ...	...	Caicus (R), A. Minor; Cacathis (R), India
Chinchaycocha, Peru ...	...	Cainas (R), India

The identifications of Fuquene and Peten are striking.

In the reduction of mountain names very little fortune has ever attended me. The cause appears to be that few are Sumerian, that some are Agaw, and that some are most likely older.

America.		Old World.
Cotopaxi, Ecuador ...	...	Cottia, Alpes
Cotocha ...	...	Pactyas
Sangay, Ecuador ...	...	Syngaras, Mesopotamia
Tancitaro, Mexico ...	...	Cithæron, Greece
Orizava, Mexico ...	...	Oropeda, Spain
Apanecas, Central America ...	...	Pangæus, Macedonia
Assuay, Ecuador ...	...	Ossa, Greece
Pulla, Ecuador ...	...	Pelion, Greece
Ambato, Ecuador ...	...	Idubeda, Spain
Atitlan, Central America ..	..	Boetios, Drangiana
		Eta, Athos, Greece
		Ida, Asia Minor, etc.
Alausi, Ecuador ...	...	Alesion, Greece; Olgassys, A. Minor
Pasto, Ecuador ...	...	Phœstus, Greece
Perote, Mexico ...	...	Pierius, Greece
Merendon, Central America ...	...	Maro, Sicily
Cadlud, Ecuador ...	...	Cadmus

Some of these must be identical.

The town names are thus shown:—

Peru.	Mexico and Central America.	Old World.
*Arica ..	—	*Arakha, Susiana
*Recuay .	—	Arakhosia, Persia
Urcum ...	—	Arikaka, Arakhosia
„	—	Araxa, Lycia
„	—	*Erech, Accad (Bible)
„	—	*Rechah (Bible)
„	—	Aricada, Drangiana
Arequipa ...	—	Aragorasa, Armenia
„	—	Archabios, Colehis
„	—	Arukanda, Lycia
„	—	Argos, Greece
*Arapa ...	*Trapuata, Mexico ..	*Arubath (Bible)
„	Rabin, Central America .	Arabissus, Cappadocia
„	—	Arbaka, Arakhosia
Yura ...	... Yoro, Central America	. Ora, India E.
Huaura ...	—	
*Oruro ...	... Aviare R, Central America ..	*Oruras, A. Minor
„	Arispe R, Central America ..	Zariashes (R) Bactriana
Astobamba ..	Iztapalapau, Mexico .	*Hasta, Liguria

Peru.	Mexico and Central America.	Old World.
*Huasta ...	—	Asta, Liguria and Lusitania
"	—	Ashdod (Bible)
"	—	Astasanna, Aria
"	—	Asthagura, India E.
"	—	Astakapra "
Ambato, M ...	Ambalema, New Granada ..	
*Acoramba ...	—	*Corombo (R) Carmania
Illampe, M ...	—	Cosamba, India S.
Cosapa ...	*Cosuma, Yucatan ..	*Cosamba, India S.
Casma ...	—	
Cuzmo ...	—	
*Chosica ...	*Cuiseo, Mexico ...	*Cuzikos, A. Minor
*Cuzco ...	Chuscal, New Granada	*Gauzaka, Paropamisada
Quiseo ...	—	Choastra, Media
Congata ...	Concanu, Yucatan ...	Concana, Spain
Canchari ...	Conagua, New Granada	Iconium, A. Minor
Chanca ...	Conchagua, Central America	Xoana, India
Conongo ...	—	Gain, Palestine
Acañ ...	—	Aquinium, Italy
Quinoa ...	—	
*Cacary ...	Cacahuamilpa, Mexico	*Acharacha, Caria
Caquiaviria ...	Chiquisa, New Granada	Gaggra, Paphlagonia
"	—	Gagasmira, India E.
Chiclayo ...	Cochilha, New Granada	Cocala, India S.
*Chepen ...	*Coban, Central America	*Cabena, Media
"	*Coban, Guatemala ..	*Capena, Etruria
"	—	*Cabbon, Palestine
"	—	Cepiana, Lusitania
"	Caparrapi, New Granada	Caberasa, Media
"	*Chipata, New Granada	Capution, Sicily
"	—	*Gibbeath, Palestine
*Chipaya ...	*Kabab, Yucatan ...	Cuba, India S.
"	Chepo, New Granada ..	*Capua, Italy
"	—	*Gaba, Palestine
"	—	Gabii, Italy
"	*Chapala, Mexico ..	*Capula, Venetia
"	*Chapul, Mexico ..	Cubilia, Lycia
"	Acapulco, Mexico ..	
"	—	*Cabale. Media
"	—	Cabul, Palestine
Talcanta ...	Cundinamarca, New Granada.	Conta, India E.
"	—	Aricanda, A. Minor
Quillo ...	*Akil, Yucatan ..	*Aquilaia, Italy
"	Chollolan, Mexico ...	
"	—	Kaloe, Lydia
"	—	Keilah, Palestine
"	—	Agylla, Etruria
"	—	Akela, Media
"	—	*Chalcis, Bæotia
Chilca ...	—	Gilgal, Palestine
Quellca ...	*Chalco, Mexico ...	
Colca ...	Chalcicomula, Mexico ..	
"	*Colosa, New Granada	*Colossai, Phrygia
"	Chalisco, Mexico ..	Akalissos, Pontus
*Chumu ...	Comayagua, Honduras	*Cume, Mysia
*Caime ...	*Cuame, New Granada	*Cumæ, Italy
"	Chima, New Granada	Choma, Pisidia
*Cambe ...	—	*Cambe, Gedrosia
Combapata ...	—	
Chicamo ...	*Cucumba, New Granada	*Cocambo, Gedrosia
*Camana ...	—	*Comania, Caria

Peru.	Mexico and Central America.	Old World.
*Guamani ...	*Guaman, Mexico ...	*Comana, Pontus and Capp.
"	—	Cominium, Samnium
"	Guaymas ...	*Chemosh (Bible)
"	—	Gimza (Bible)
"	—	Camisa, Cappadocia
*Chimeroo ...	—	*Kimara, India E.
*Catari ...	*Chatura, New Granada ...	*Cytorus, Armenia
"	*Cadereita, Mexico ..	*Coddura, India S.
"	Catarumbo R, New Granada...	Cottiara, India S.
"	—	Cotuora, Pontus
Quito ...	*Cuaita, New Granada	Kattah, Palestine
*Coati...	Oicata, New Granada. .	*Cuta, Colchis
"	—	*Caudium, Sabine
*Chatuna ...	—	*Catana, Sicily
*Costaparaca .	—	*Cotobara, India S.
Costabamba ...	—	*Cottobara, Gedrosia
Curaray, R ...	*Carere R, New Granada	*Careura, Caria and India
*Ocaruro ...	—	—
"	Charala, New Granada	Curula, India S.
*Charasani ...	—	*Caresena, Mysia
Charcani ...	Chiriguana, New Granada	Corcobana, Ceylon
*Chuana ...	Chanaco, Mexico . .	Kanah, Palestine
"	Canipauna, New Granada	Kana, Mysia
"	Cunacua, New Granada	Kœne, Cappadocia
"	—	*Canagara, India S.
*Caraccona ...	—	*Aganagara, India extra.
"	—	Khoana, Parthia
Ocona... ..	Oceansip. Yucatan	Aganagara, India extra.
*Ascona ...	—	*Oskana, Gedrosia
"	—	*Assecona, Spain
*Acora ...	—	*Acarra, Susiana
*Acari ...	—	*Achor, Palestine
Acoramba ..	—	*Cora, Lalutus
Corocuero ...	—	Agiria, Spain
*Ancon ...	—	*Ancona, Italy
Hancane ...	—	—
*Colan ...	Calan, Yucatan	Calneh, Accar (Bible)
"	—	*Gelan, Palestine
Calanacoche ...	—	Calindoca, India S.
*Calasnique ...	—	Calinaxa, India S.
"	*Oculan, Mexico	Okelum, Lusitania
"	—	Akelanum, Sabine
Cailloma ...	Caluma, Ecuador . .	Gallim, Palestine
Calupe ...	Jalapa, Mexico and C. Amer.	Calpe, M.
Challapa ...	Jutigalpac, America	Haran (Bible)
Ocharan ...	—	—
"	*Garupa, New Granada	Acharna, Attica
Caropango ...	*Labna, Yucatan	*Gariphus, India
Llapo ...	*Labhakhappha, Yucatan	*Labana, Mesopotamia
"	—	*Labaca, India S.
Lambayeque...	Lampa, Salvador ...	Alambatesa, Comaria
Illampo, M ...	Liborina, New Granada	Lampsacus, A. Minor
"	—	Lombare, India
Larecaja ...	—	Lariaga, India E.
Mantaro ...	Huamantla, Mexico	Mendola, India S.
*Manani ...	Mani, Yucatan ...	*Maniana, India E.
Mani ...	—	Amana, Media
Mirinavis ...	Merindon, Honduras	Morunda, Media
Marona ...	—	—
Machurana ...	Macaranita, New Granada	Magars, India S.

Peru.	Mexico and Central America.	Old World.
Machurana ...	Mogorontoque, New Granada	Mogarus, Pontus
"	—	Makrasa, Lycia
*Macari ...	—	*Megara, Gr., Sicily
"	Mozca, Mexico ...	Maxere, Hyrcania
"	Mescala " ...	
"	*Mogote, New Granada	Maguda, Mesopotamia
*Malla ...	—	*Mala, Pontus
"	—	Millo, Palestine
Amiloe ...	—	Amilos, Arcadia
Mantaro ...	—	Manda, India
*Marcara ...	—	*Margara, India E.
*Marcomarcani Cundinamarca ...	—	*Margana, Ceylon
"	—	Maricada, Bactriana
"	*Margua (R) New Granada	*Margus (R) Margiane
"	*Masaya, Yucatan	*Massah, Palestine
"	—	*Amasia, Pontus
*Masin ...	—	*Messana, Sicily
"	—	Messene, Greece
*Mapiri, R ...	—	*Mapura (R), India
*Napo... ...	*Neyba, New Granada	*Nebo (Bible)
"	—	Nebah (Bible)
"	—	*Nepea, Phrygia
*Nasca ...	—	*Nasica, India S.
Nanasca ...	*Nunkini, Yucatan	*Nanaguna, India S.
"	Nicaragua, C. America	Nuceria (?), Italy
"	—	Anaguros, Greece
"	Nimaima, New Granada	Nommana, Carmania
"	Nare "	Nar, Italy
"	—	Anara, India S.
*Unanue ...	—	*Ninue, Nineveh
"	—	(Accad) Bible
"	Oiba, New Granada	Ophia, Sabine
"	Upia "	Aphia, Phrygia
(Pucara, castle)	—	[cara, castle, Akkad]
*Pucara ...	*Bucaramanga, New Granada	*Begorra, Macedonia
*Pucala . .	—	*Pygela, Ionia
"	—	Pegella, Lycaonia
Azangari ...	—	Agara, Susiana
"	—	" India S.
Patapa ...	[Patawi, Siam] . .	Patavium, Bythinia
Patavilca ...	—	" Italy
Pataz ...	—	
*Paita... ...	Pauta, New Granada	*Bata, India S.
Avapata ...	*Pitu, Mexico ...	Beda, Mesopotamia
*Pita ...	Peto, Yucatan ...	*Pida, Pontus
Putu ...	*Ubate, New Granada	*Eboda, Palestine
"	—	Pitueia, Mysia
"	—	Phauda, Pontus
*Putina ...	*Peten, Yucatan ...	*Pitane, Mysia
"	Potonchan, Yucatan	*Padua, Palestine
"	—	Bitoana, Caria
Piura ...	Perote, Mexico ...	Pieria, Greece
Yapura ...	—	" Syria
"	—	Phiarasa, Pontus
*Pitua ...	*Paturia, New Granada	*Patara, Lycia
"	Neopetara, Mexico	Badara, Carnithia
"	—	Sobatra, Lycaonia
"	*Zupetara, C. America	*Opetura, India
"	Sopetran, New Granada	...
*Paria ...	*Para "	*Parium

Peru.	Mexico and Central America.	Old World.
Paria ...	... Paracheque, New Granada	... Pyrrha, Caria
"	Ibarra, Ecuador ...	... Birei, Palestine
Parara ...	—	Podoperura, India extra.
Pararin ...	—	—
"	Parras, Mexico ...	... Parisara "
"	*Barichara, New Granada	... *Barakura
*Parac ...	Parachoque "	... *Berachah, Palestine
Cotaparaco ...	—	Pharugia, Doris
Pariache ...	—	Verrugo, Latium
Pariacote ...	—	Barkine, Spain
Paruchay ...	—	—
Puno ...	—	*Punon, Palestine
*Punyon ...	—	Panion, Thessaly
Panos ...	—	—
Pando ...	—	Pandassa, India extra
*Papai ...	*Paipa, New Granada	... *Papha, Pisidia
Babo ...	—	*Paphos, Cyprus
*Pusi ...	—	*Pise (3)
Puzuzi ...	—	*Paseah, Palestine
*Pasa (mayo)...	—	*Ephesus, A. Minor
Pisagua ...	—	*Phoizoi, Arcadia
(Pirca Quichua	—	—
Wall, Enclou-	—	Pergamos
sure) ...	—	Perga, Pamphylia
"	—	Pyrgib, Etruria
"	—	*Bamala, India S.
*Pomalca ...	*Paime, New Granada	*Apamea, Parthia
Pichigua ..	Bogota "	... Phecis, Greece
Puquien ...	Pachuco, Mexico	... Phokaia, Lydia
Pacas (mayo)...	—	Pauka, Italy
Palalayuca ...	—	Palalke, Pontus
"	Bolonchan, Yucatan	... Bolon, Spain
"	—	Pelon, Palestine
*Pasco ...	Tobasco, Yucatan	... *Boskath, Palestine
*Posco ...	—	Bezek, Palestine
*Pisco ...	—	*Phuska, Macedonia
Piscachacha ...	—	*Physkus, Caria
Pacsi ..	—	Paxos I.
*Pista...	*Piste, Yucatan ...	... *Pæstum, Italy
Arambolu ...	*Arama, New Granada	... *Aruma (Bible)
"	—	*Aroma, Caria
"	—	Ariminium, Italy
*Racanya ...	*Ariguani, New Granada	... *Rakkon (Bible)
Tacaraca	—	*Oricana, Media
"	—	Arucanda, Lycia
"	Raquira, New Granada	... Aragorasa, Armenia
"	Sinu "	... Sena, Etruria and Umbria
"	—	Zaananim (Bible)
"	Sanalarga "	Sannala, India E.
"	*Sinolca, Mexico ...	—
"	Sonora "	... Posinara, India E.
"	—	Asinarus, Sicily
Aposungo ..	Okosingo, Yucatan	... Sangada, India E.
Sangay	Texanungo, Mexico	... Sangala, "
*Charasani	—	Alosanga, India extra.
"	—	Caresena, Mysia
Antisana	—	Astasanna, Aria
*Sanagoran	—	*Suanagora, India extra.
"	*Sensonate, S. Salvador	... *Samsannah (Bible)

Peru.	Mexico and Central America.	Old World.
*Sanagoran ...	*Tzintzontzon, Mexico	... *Susonnica, Venetia
"	—	... *Nazianzene, Cappadocia
"	*Sonson, New Granada	... *Saniseni, Paphlagonia
"	Site "	... Side, Pamphyl., Laconia
"	Suta "	... Sidas, Greece
"	*Susa "	... *Suzah, Palestine
"	—	Susa, Susiana
"	Susagua "	... Suissa, Cappadocia
"	—	Suessa (R), Italy
"	—	Suassus, India
"	*Susacon, New Granada	... *Susicana, India E.
Soroche ...	—	Syracuse, Sicily
Surco ..	—	Saraka, Media
"	—	Sariga, Armenia
"	—	Saruge, A. Minor
Sorata ...	Surata, New Granada	... Sarid, Palestine
"	*Sarare, New Granada	... *Sararra, Mesopotamia
"	*Sura "	... *Saura, Susiana
*Sikuani ...	—	Saganus, Carmania
"	—	*Saguana, Armenia
"	—	*Sakovna, Belicia
"	—	*Sikuon, Greece
*Succha ...	—	*Saca, Arcadia
Sachaca ...	Sachica, New Granada	...
Sacayacu ...	Soacha "	...
"	Sacota "	... Adisaga, Media
Sikasika ...	Segamoso "	... Sakasena, Cappadocia
"	Fusugasuga "	... Zazaka, Media
"	Zaccacal, Yucatan	... Secacah, Palestine
Sogon ..	—	Sikinos, I.
Sechura ..	—	Shicron (Bible)
"	*Salli, Yucatan	... *Sala, Armenia
"	*Zelaya, Mexico ...	... *Sela, Palestine
Sullillica ..	Zulia, New Granada	... *Solia, Spain
"	*Salamo, Guatemala	... *-alamis, (?)
"	Salmaguella, New Granada	... *Zalmoneh, Palestine
"	—	Salmantike,
Suyana ..	*Senote, Yucatan	... Aznoth, Palestine
"	—	*Sunnada, Phrygia
"	Zerna, New Granada	... Sarnuka, Mesopotamia
"	*Zema "	... *Shema (Bible)
"	Zimapan, Mexico...	... Ezem "
"	—	*Zama, Capp. and Mesopo.
Saman ...	Semindoco, New Granada	... Semina, Parthia
"	*Samala, C. America	... *-imyla, India S.
*Sumbay, R ..	—	*Sambus (R), India
*Supe ...	*Saboya, New Granada	... Sabius, Cappadocia
Monsifu ..	*Sube, Suba "	... Zaba, India extra
"	—	*Zobia, Pisidia
"	—	Shebah (Bible)
"	Yzabal, C. America	... Sapolus, India extra
*Zepita ..	—	*Zephath, Palestine
Zapatoca ..	—	Sibecla, Lycia
"	*Zupetara, New Granada	... *Sabatra, Lycaonia
"	Sopetran "	...
*Atocama	—	*Attacum, Spain
Tucuma	Tocaima "	...
*Tanca ..	*Togui "	... *Tugea, Spain
"	—	*Tukki, Spain
"	—	Athach (Bible)

Peru.	Mexico and Central America.	Old World.
*Tauca	...	*Techoa, Palestine
"	*Tekoh, Yucatan...	... Tegea, Greece
"	Tacubaya, Mexico	... *Thagora, India extra.
Tacaraca	... *Tachira, New Granada	... *Tagara, India S.
Tuquillipon	... Tacalooa	... Taxila, India E.
"	Tekit ...	... Attagus, Boeotia
Tarapaca	...	Tarrago, Spain
"	*Tolima, New Granada	... *Telem (Bible)
"	*Toloman, Guatemala	... *Telamo
"	Tuloom, Yucatan	... *Telamina, Spain
*Thalambo	...	*Teleboas, A. Minor
"	Tulapan	... Tholobona, India S.
Dauli ..	... Tolla, Mexico	...
"	Tolo, New Granada	...
"	Tula, Mexico	...
"	Tollan, Mexico	... Dolion, Boeotia
"	Delen, New Granada	... Dolionis, Mysia
"	—	Tullonium, Spain
"	—	Dilean, Palestine
Tarma	...	Atarmes, Bactriana
"	—	Tarbakana, Paropanisada
"	*Tabi, Yucatan	... *Taba, Phrygia, Caria
"	Teabo, Yucatan	... Thebæ, Boeotia, Thessaly
Tabatingo	... Tabeo, New Granada	... Tebbath, Palestine
Tapacoche	... Tabachula, Guatemala	... Tapuah, Palestine
"	Tabasquillo, Mexico	... Thebez, Palestine
*Tipuani	... Tepan, Mexico	... *Tabiene, A. Minor
"	*Tibaria, New Grenada	... *Thebura, Assyria
"	Tubar, Mexico	...
"	*Tapata, New Granada	... *Tobata, Paphlagonia
"	Topia, Mexico	...
"	Tobasco, Yucatan	... Thapsacus, Syria
Tuman	.. Tamoin, Mexico	... Dimonah (Bible)
"	—	Temani
Tumbo	... *Tampico, Mexico	... Tumnos, Caria
Tambo	... Temisco	... *Tamassis, India E.
"	*Tamasinchali, Mexico	...
"	*Tamalameque, New Granada	*Temala, India extra.
"	Tumila	...
"	*Tamar	*Tamarus, India
"	Tanquichi, Mexico	... Taanach (Bible)
"	Tenochtitlan	...
"	*Tena, New Granada	... *Toana, India extra
"	Tizimin, Yucatan	... Tisia, Italy
"	Tiza[pan], Mexico	... Tisa, Carmania
"	Tausa, New Granada	... Tiausa, India
"	Tuz[pan]	... Dosa, Assyria

The Accad cities mentioned in the Bible, in Genesis x, v. 10, 11, 12, besides Babel, Accad, and Rehoboth, are :—

Erech	compare ...	... Arica, Peru
Calneh	"	... Calanoeche (Peru), Oculan
Ninue or Nineveh	"	... Unanue, Peru
Calah	"	... Colacote
Resen	"	... Charasani

Many cities in Palestine are closely represented.

A circumstance worthy of remark, and which may indicate

Sumerian influence in Brazil, if not that the Sumerians had settlements there, is that the Guarani word for town is Taba, that is Taba, Thebes, etc., of geography, the Daba of the present Georgians. If the Sumerians had at any time a settlement on the great river mouths, the passage of the Atlantic would be credible, and the knowledge of the Atlantic ocean by the geographers of Babylonia and Pergamos accounted for.

Under this head of topographical nomenclature, a course of investigation is being pursued by the Rev. Professor John Campbell of Montreal, and formerly of Toronto, which can be consulted with great advantage.

In the "Canadian Journal," and under the titles of the "Hories" and of "The Shepherd Kings of Egypt," Prof. Campbell has adopted as his basis the genealogies of the books of Genesis, Kings, and Chronicles. With the help of the Egyptian and classic data, he is bringing to bear a flood of light upon the Sumerian epoch of civilisation with regard to the genesis and migration of nations, and the mythology of the period. All tends to illustrate the importance of the protohistoric era.

Much of this work is necessarily tentative, and although there are few illustrations with regard to America, these memoirs can be profitably consulted by the investigator in common with those of Lenormant and the Egyptologists. Of course in Bryant and many of the old mythologists many of the collateral facts may be found, but treated in a manner incompatible with our present knowledge.

Upon the grand question of the population of Canaan, Professor Campbell gives us invaluable materials for forming a judgment. This population most probably extended into Egypt, where Brugsch Bey has found 400 parallel names, and in which I look for the "Turanian" element. Thebes, and the other old names by which Egypt was known to the Greeks are Sumerian. The intercourse with Caria long continued. The union of Sumerians with Semites explains the ethnological peculiarities of the Jews, who are evidently a mixed race with two elements.

As to the ancient extent of the Sumerian region in America, it cannot yet be determined, for it must have been wider than at the Spanish Conquest, but with regard to the names here given for the New World and the Old, it must be borne in mind that some are Agaw, and extend into Brazil. The consideration of the Brazilian river names gives us a test in relation to those of Europe, and they confirm the opinion I have given of an Agaw influence in Europe anterior to the Sumerian, and which will have to be taken into account by the craniologist. He has to provide for the Vasco-Kolarian, the Agaw, and the Sumerian migrations.

The whole of the phenomena of man in America represent an arrested development of civilisation, cut short as compared with Europe and Asia, not by climate, as in Africa, and yet quite sufficient to include the two epochs of great stone monuments and of palatial works with inscriptions, epochs which embraced the first spiritualised religion, that of the worship of light; a time of thousands of years, so remote that, in the old world, it has now only its scanty votaries among the Parsees of Bombay. Time, too, so remote, that the great religions of the globe, Judaism, Christianity, and Islam had, with Buddhism, got time to expand and to cover the eastern hemisphere, while, until the Spanish conquest, the Americas had, in the flux of centuries, never heard their revelations. Few things so strongly pourtray the deep, dark gulf of separation as this, when associations which had been commonly shared from the beginning of mankind, were snapped in the time of their deepest interest and moment, and it was hazard, and not design, placed the Indians that perished and the Indians that continued under the teaching of the missionaries of Spain and Portugal, and which all have not yet known.

The evidence of language comes in support of this arrest of development, for there are no languages in America of the later and higher forms. When the early Akkad stopped, there all stop. This it is which gives the false impression of there being a peculiar and special American grammar. This has been so specially studied and treated, whereas, the languages in America, which cannot be rightly called American languages, are under the same conditions of prehistoric grammar as the earlier languages of the old world. The grammar of Omagua may be as truly called Caucasian as American, and, if we choose, that of Abkhas might be as rightly named American as Caucasian.

As there was in the furthest or prehistoric days a stream of emigration continuously from the old world to the new, the question arises whether this set back again, and whether a knowledge of the new world was carried to the old. The first set of population appears to have been over Behring's Straits, or across the narrow seas, and migrations which could cover the eastern world, even with Akkas and Bushmen from Lapland to South Africa, would be able to fill America from the snowy pole to Tierra del Fuego, as there is witness enough to show, in blood, in speech, and in folk-lore.

It is very questionable whether at any time there was regular intercourse over the Atlantic, for that would have needed ships, and a trade once set up, other animals besides dogs, and other plants than those now found, would have followed man.

In what we know of the historical period, under the Greeks

and the Romans, a lively knowledge of America was lost ; the Greeks could not reach it from the west, and the Romans, when they settled on the shores of the Atlantic, had other cares than to risk the wide, dark sea.

A dead knowledge lingered, not only of the geography of the Americas, but of Australasia, which is of no less interest with regard to the latter region, because that exhibits, philologically, evidence of early migrations of the Mincopie or Pygmean in Borneo, of the Sandeh or Niam-Niam of the Nile in Tasmania, and of the Agaw in Galela, and in the other languages recorded by Wallace.

There was indeed a system of geography long prevalent among the ancients and in the dark ages, which is referred to in the Timæus of Plato, and was notably maintained by Crates of Pergamos, 160 B.C. (Reinaud, "*Journal Asiatique*", vol. i, new series, 1863, p. 140), and also referred to by Virgil in the *Æneid*. Four inhabited worlds were treated of, and there appears to have been, in traditions, an imperial title of Monarch of the Four Worlds. This I connect with the statement of Mr. George Smith that Agu, an ancient king of Babylonia, called himself King of the Four Races. Again, with Prescott, who, in the "*Conquest of Peru*," book i, ch. ii, says,—“It is certain that the natives had no other epithet by which to designate the large collection of tribes and nations who were assembled under the empire of the Incas, than that of Tavintinsuyu or Four Quarters of the World.” He quotes Ondegarde, *Rel. Prim. MSS*, and Garcilasso, *Comentarie Real*, ii, 11. This title was perhaps a prerogative of the middle king, or monarch of the middle kingdom, of the great civilized empire of the world. The Chinese preserve the tradition of the middle kingdom, the trinary having followed the quarternary system. Thus, in Genesis there are three sons of Noah. The Vedas refer to three worlds.

The nomenclature of Ptolemy and the other geographers is of the Akkad epoch, and that of the early Biblical books, Akkad or Babylonian.

The school of Pergamos taught that the world, which must have been treated as a sphere, contained four worlds. Ours was one of these, and as is true in Asia that it does not cross the line, so it was supposed that Africa does not cross the line, and the Babylonian geographers were well acquainted with Southern Asia but not with Southern Africa. This Northern World was balanced by an Austral World, and this is so, depicting the Australasian Islands, the scene of Sumerian migrations, and Australia, which was known to them. Australia was, by the Sumerians as by far later geographers, supposed to

extend from opposite Asia, as a Terra Incognita of the maps, opposite Africa.

A not less remarkable affirmation was, that the Northern World and that of Australia were balanced on the other side of the globe also by a Northern World and continent and by a Southern World, and this is so in North and South America.

It was said, being nigh the truth, that these four worlds were cut off by belts of ocean, one from north to south, and by another running round the middle of the world from east to west. Such ocean we know shuts off Asia from Australia, and those ancients might be forgiven, who drew a sea over the narrow necks between North and South America, which must then as now have been passed by canoes at passages on the Atrato and on other rivers.

These four worlds were alleged to have their men, as we know they had and have, but to account amid so much truth for intercourse not taking place between them in their days, a fable was got up that the seas were made impassable. The philosophers, however, forgot to tell us how the knowledge of these other worlds and the men in them was gained. Gained too, it was, and lost by the cessation of intercourse, after the Sumerians, with the Americas. This was perhaps owing to the rise of a great power in China, which disturbed the road from India, and the seats of kingdom in Southern Asia.

How that dream of a true globe and its continents and people reached the Greeks and Romans, and how it suggested to the flatterers of Augustus a title of monarch of those four worlds, is here accounted for. It must be traced beyond Pergamos to those older schools of learning, known to us under such a name as Chaldean, but which had flourished in protohistoric epochs from the dawn of civilisation.

There must at one time have been in the olden world, men who could bring back this knowledge of the Americas from their Nineveh to its Nineveh and Babel, where the empire of the four worlds got centred, and where one language was spoken and written for the government of the earth. How truly was it then said of Babel, "And the whole earth was of one language, and of one speech" (Genesis xi, 1).

The fall of that power was indeed confusion of nations and of tongues.

After a time, the tradition alone of these other worlds lingered, as we have seen, as a theory of cosmography; lingering to be condemned by the Christian church, as a thing that men of learning ought not to learn, but reproduced in our own language by Sir John Mandeville. He insisted that the world was a globe and could be circumnavigated, and he tells a tale of a man

from Norway, who had gone so long by land and by sea that he had environed all the earth, that he was come about to his own marches.

The intercourse in times of yore between the new world and the old, now again brought to light, rests upon no slight evidence, although the whole of it cannot be included here. It comes in confirmation of the labours of those who have gone before me, and of my own, carried on step by step for some time.*

The relationship of the topographical nomenclature and of the languages of the old world with those of the new, was laid down by me in my paper, on the "Comparative Grammar of the Egyptians," last year. What is now published, is the development and detail of the same principles which had occupied me for many years, but which have not till now been brought nearer to complete exemplification.

It may be briefly said that my object now has been to show the development of language in prehistoric grammar, and the unity of language in all continents, and more particularly the unity of culture generally throughout the world, by dealing with what has been regarded as the exceptional position of America. Many points are not touched, not from want of knowledge, but want of space. All that has been here stated will be found in conformity with the results obtained by other inquirers on the prehistoric and protohistoric epochs, and will throw a light upon their labours. It is hoped that many portions will, in this respect, be found of general use beyond their special application.

The development of language, mythology, and culture generally, the migrations of nations, the naming of animals, the naming of mountains, of rivers, and of towns, are here illustrated, not only in the infancy of mankind, but in the institution of a great civilisation, so ancient that its traditions had become dim, and that its history has to be recovered from beneath the rubbish mounds of its cities.

The history of the fall of such empires, and of such kingdoms, is a tempting subject, but it is one which belongs rather to the historian, for it took place in the ages of history, than to the students of the Anthropological Institute. The results may, however, be considered by us, for they show that the history of savagedom and of civilisation is the same for both halves of the globe. In America the forms of savagedom are better preserved and these give us some of the most valuable elements for filling up what is on our side wanting.

The American materials are also of none the less value because

* See various papers of mine in the Journals of the Ethnological Society, of the Anthropological Institute, of the Palestine Exploration Fund, etc.

they help to build up the uniform history of civilisation, of progress, which may be long delayed by barbarism, but cannot in the end be checked. It is a progress amid which, while the oldest and rudest races may still live, their rudest propensities and habits are doomed to decay, and their bloodiest superstitions to be abandoned.

The philological considerations are, in this sense, also of interest, because language is not only as here used a history of culture, but a great and living instrument of culture. Its influence is, of course, a disturbing one as well, and hence, although not decisive for ethnological determination, it is none the less to be regarded. Speech is the heir, the representative, the transmitter of the accumulated experience of civilisation in thousands of years. Hence its apostolic power. In proportion to the improved capacity of transmission in cultivated languages, so will such languages influence a lower race to which they are communicated, and by which they are used. So a low race acquiring a high language becomes more capable of improvement, and makes greater advances than the low race which retains a rude tongue.

Of this there are examples enough, and in Central and South America the acquirement of the Spanish tongue has given large populations means of advancement which they do not possess in the Quichua or Maya, which were before written, any more than in Guarani, which the Jesuits put in writing. By the help of Spanish the people and their leaders of pure Indian blood now in power, have become orators, poets, lawyers, able to take place alongside of those of old Spain. The effect of race remains, but a great advance is due to speech.

The fusion of race wished for by some can only be effected by the deterioration of the better, or it will be compensated for by the practical annihilation of the weaker; but the fusion of language is a great and safe instrument for bringing about among various populations a harmony of civilisation. English will thus act in India. It is civilisation which is the best heritage of mankind, and the more this can be brought within the compass of all, even of the meanest, the greater will be the benefit conferred upon the whole.

APPENDIX TABLE OF SUMERIAN WORDS.

The following is a brief list of words divided into three regions, the American including two columns, and while in some cases a root may be traced throughout, it will be seen that more commonly the western and American roots or types cross in the Indo-Chinese region. This table may be much extended.

	<i>Ak.</i> , Akkad.	<i>Cam.</i> , Cambodian	<i>Aym.</i> , Aymara.	<i>Mex.</i> , Aztek.
	<i>C.</i> , Circassian.	<i>Mon.</i> , Peguan.	<i>Q.</i> , Quichua.	<i>Oth.</i> , Othomi.
	<i>G.</i> , Georgian.	<i>Bu.</i> , Burmese.		<i>Tara.</i> , Tarahumara.
		<i>Ann.</i> , Annam.		<i>Huas.</i> , Huasteca
				<i>Poc.</i> , Poconchi.
	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
Man	.. <i>farra</i> , Ak.	... <i>karu</i> , Mon	... <i>kkari</i> , Aym., Q.	[<i>ucari</i> , Cora]
	... <i>mulu</i> , Ak.	... <i>lu</i> , Burmese	...	—
	... <i>kmari</i> , Geo.	... [mairima, Bu., woman]	...	—
	... <i>tle</i> , Circas.	...	—	<i>tlacatl</i> , Huas.
	... <i>gun</i> , un, Ak.	... <i>hplun</i> , Mon	... <i>runa</i> , Q.	... <i>uinic</i> , Mex.
		... <i>khon</i> , Siam	...	... <i>ninic</i> , Maya
		... <i>kon</i> , Shan	...	[<i>akun</i> , Poc.; boy]
	... <i>ku</i> , Akkad	... <i>paka</i> , Mon	... <i>chacha</i> , Aym.	... <i>nx hi</i> , Oth.
		... <i>nguoi</i> , Annam	... <i>kosa</i> , Q.	... <i>oquich</i> , Mex.
Woman,				
etc.	... <i>sak</i> , Akkad	... [su, man, Bu]	... [kosa, Q., man]	... <i>nsu</i> , Othomi
	... <i>shooz</i> , Circ.	...	—	... <i>soua</i> , Mexico
	... <i>rak</i> (a) Ak.	...	... <i>rakka</i> , Q.	...
	... <i>mak</i> , Akkad	... <i>meingua</i> , Bu.]	... <i>marmi</i> , Aym.	... <i>muki</i> , Tara.
		... <i>mairima</i> , Bu.	...	—
	... <i>dam</i> , Akkad	... <i>phdey</i> , Cam.	...	—
				[<i>dame</i> , Oth.]
				[<i>toniol</i> , Huas.]
Head	... <i>ku</i> , Akkad	... <i>kbal</i> , Camb.	... <i>ppekei</i> , Aym.	...
	... <i>su</i> , Akkad	... <i>katan</i> , Mon	...	—
	... <i>shha</i> , Circ.	... <i>ko</i> , Karen	...	—
		... <i>kamon</i> , Annam.	... <i>uma</i> , Q.	... <i>aysaca</i> , Totonaca
		... <i>alu</i> , Kumi	...	... <i>hool</i> , Mex.
		... <i>al</i> , Kumi	...	... <i>moola</i> , Tara.
Hair	... <i>sik</i> , Akkad	... <i>sac</i> , Cambo.	... <i>suncca</i> , Aym.	... <i>xta</i> , si, Oth.
	... <i>shhatsey</i> , Cir.	... <i>swet</i> , Ann.	... <i>socco</i> , Q.	... <i>tzotz</i> , Mex.
		... <i>asham</i> , Kumi	...	...
Face	... <i>ka</i> , Akkad	...	... <i>akanu</i> , Aym.	... <i>axaya</i> , Mex.
	... <i>piri</i> , Georg.	...	... <i>riccay</i> , Q.	... [Maya]
Eye	... <i>limta</i> , Ak.	... <i>ta</i> , Annam	... [mata, forehead, tahnaluich,	
	... <i>twali</i> , Georg.	... <i>panek</i> , Cam.	...	... <i>ghual</i> , Maya
	... <i>nee</i> , Circ.	... <i>mitthah</i> , An.	... <i>naira</i> , Aym.	... <i>nich</i> , Mex.
	... <i>si</i> , Akkad	...	... <i>nagui</i> , Q.	... <i>pusiki</i> , Tara.
Ear	... <i>pi</i> , Akkad	... <i>pik</i> , Ahom	...	—
	... <i>tal</i> , Akkad	... <i>khato</i> , Mon	...	—
	... <i>quri</i> , Georg.	... <i>nakhu</i> , Karen	... <i>rinceri</i> , Q.	... <i>gu</i> , Othomi
	... <i>takumah</i> , Circ.	... <i>tai</i> , Annam	... <i>hinchu</i> , Aym.	... <i>nacaz</i> , Mex.
Mouth	... <i>ka</i> , gu, Ak.	... <i>amaka</i> , Kami	... <i>lakka</i> , Aym.	... <i>nechkala</i> , Tara.
	... <i>dzheh</i> , shey, C. kha, Mon	...	... <i>simi</i> , Q.	... <i>kama</i> , Huas.
	... <i>dzeh</i> , Circas.	... <i>zhua</i> , Mon	... <i>kchaka</i> , Aym.	... <i>chi</i> , Mex., Poc.
Tooth	... <i>dzeh</i> , Circas.	...	...	... <i>tzi</i> , Oth.
Forehead	... <i>tik</i> , Akkad	...	... <i>mati</i> , Q.	...
	... <i>thkhem</i> , Geo.	...	...	...
Tongue	... <i>eme</i> , Akkad	...	...	... <i>qhane</i> , Oth.
	... <i>ena</i> , Georg.	...	...	... <i>tenilla</i> , Tara.
				... <i>zimagat</i> , Toto
Heart	... <i>sa</i> , Akkad	... <i>zeit</i> , Bu.	... <i>soncco</i> , Q.	...
	... <i>libis</i> , Akkad	... <i>lao</i> , Annam	... <i>chuimo</i> , Aym.	...
	... <i>guli</i> , Georg.	... <i>chai</i> , Siam	...	—
	... <i>ghey</i> , Circ.	...	...	—
Blood	... <i>us</i> , Akkad	... <i>htseihn</i> , Mon	... <i>ghi</i> , Oth.	...
	... <i>sishkhli</i> , Georg.	... <i>swe</i> , Bur.	... <i>estli</i> , Huast	...
			... <i>xlhtz</i> , Maya.	...
Hand	... <i>sugab</i> , Ak.	... <i>su</i> , Karen	... <i>maqui</i> , Q.	... <i>cab</i> , Mex.
	... <i>kheli</i> , Georg.	... <i>ka</i> , Kumi, Ahom	... <i>tachlli</i> , Aym.	... <i>cubac</i> , Maya

	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
Hand	... ia, oyg, Circ.	... mo, Annam	...	maco, Totonaca
Foot	... arik(i), Ak. ... pekhi, perhi, G. ... tlake, Circ.	... kaw, Karen ... shon, Siam ... akho, Kami	... kayu, Aym. ... chaqui, Q. ...	... gua, Oth. ... acan, Maya ... tala, Tara.
Horn	... shi, Akkad ... rka, Georg.	... sung, Annam ... khyo, Bur.	... huakra, Aym., Q. ...	
Skin	... shu, Akkad ... kani, Georg. ... shooway, Circ....	... sare, axa, Bu.... ... — ...	... ccara, Q. ... lepitchi, Aym.... ...	...
Sun	... zal(a), Akkad ... [usil Etrus] ... mze, Georg. ... pushur, par, Ak. ... teigha, Circ. ... dgeh, Circas.	... — ... — ... — ... — ... — ...	... inti, Aym., Q. ... lupi, Aym. ... punchau, Q. ... — ... — ...	... hindi, Oth. ... tonatuih, Mex. ... taika, Tarah. ... quih, Poc. ... aquicha, Huas. ... citlali, Mex.
Moon	... lid, Akkad ... [lala, Etr.] ... es, Akkad ... maathe, Circ.	... la, Bur., lah, Kar. ... hpyalit, Siam ... — ...	... quilla, Q. ... paksi, Aym. ... — ...	... maitisaka, Tara.
Star	... ooshaghe, Circ.	... tsah, Karen	... sillo, Aym.	... tze, Othomi ... citlali, Mex. ... aquicha, Huas.
Day	... dghe, Georg. ... [ur, Ak., light] ... tam, Akkad	... thngay, Cam. ... ngay, Ann. ... tangway, Mon.	... — ... uru, Aym. ... —	... quih, Poc. ... [tonatuih, Mex., ... [sun]
Fire	... ne, Akkad ... kum, Akkad ... [nefney, Cir, ... light]	... [ne, na, Bur. sun] ... kamo, Camb. ... — ...	... nina, Q., Aym. ... — ... — ...	... naiki, Tara.
Water	... a, Akkad ... — ... aan, Ak[rain]	... ya, Bur. ... o, Sak. ... nan, Siam	... yaku, Q., Aym. ... — ... unu, Q.	... ahti, Cora ... a, Mex.; ye, Tar. ... ha, Maya
River	... aria, Akkad ... mdinare, Geo. ... ada, Akkad ... ra, Ak., flow	... [re, Bur., water] ... mrach, Burm.... ... tak, Camb. ... —	... hahuirii, Aym.... ... — ... — ...	... atoya, Mex., Cor.
Sky, Hea- ven	... siku, sigaru, Ak. ... an, Akkad ... tza, Georgian	... kor, Camb. ... kani, Kumi ... taka, Mon.	... — ... — ... —	... kaan, Maya ... andvui, Mixteca ... taxah, Pocon.
Mountain	... kur, kar(a), Ak.	... khalon, Mon.	... kkollo, Aym.	...
Hill	... taghez, Circ. ... mtha, Georg.	... tu, Mon. ... takun, Kami ... patouk, Shan....	... pata, Q. ... — ... — ...	... tepe, Mex.
Stone	... taq(a), Ak.	... tamo, Camb.	... kak, Aym., Q....	... te, Mex.
Rock	... kwa, Georg.	... kamou, Mon.	... —	... tete, Cora
Tree	... gu, iz, Ak. ... khe, Georg.	... kai, Ann. ... kanoung, Mon. ... akun, Kami	... khoka, Aym. ... quenua, Aym.... ... —	... kan, Maya
Leaf	... potuoli, Georg. ... — ... —	... slak, Camb. ... thela, lah, Karen ... la, Ann.	... llakka, Aym. ... lappi, Aym. ... —	...
Field	... si, Akkad	... sre, Camb.	... —	...
Garden	... gar(a), Akkad ... kani, Georg.	... — ... —	... cancha, Q. ... —	... zaca, Mex.
House, etc	... uru, Akkad ... ziku, " ... duk(u), Akkad. ... sakhi, Georg.	... reuan, Siam ... — ... phoun, Camb.... ... ban, Siam	... — ... — ... uta, ata, Aym., Q. ... puncu, Aym., Q.	... ngu, Othom. ... ata, Huas. ... otoch, Maya
Name	... mu, dara, Ak.	... yamu, Mon.	... suti, Aym., Q....	... sana, Mixteca

	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
Name	... tsah, Circas.	... maing, Karen	—	
	—	amin, Burm.	—	
	—	chu, Siam	—	
Sheep	... lu, Akkad	—	llama, Q.	...
	tzkwari, Georg.	—	ccaura, Aym.	...
	heene, Circ. (la mb)	—	una, Aym. (lamb)	...
Goat	... gizdin, Akkad	... mea, Camb.	... paca, Aym.	...
	thkhavi, Georg.	khapa, Mon.	—	
Bull	... khar, la, Ak.	... karau, Mon.	—	
Cow	... hari, Georg.	... khaboi, Kami	—	
	dapara, Ak.	... paren, Mon.	buf-	
	puri, Georgian.	—	[falo	
Dog	... liku, Akkad	... kala, Mon.	... anokara, Aym.	... cocochi, Tara.
	dzaghli, Geor.	... khwe, Burm.	... calatu, Q.	...
	khah, Circas.	—	—	
Lion	... likmakh, Ak.	... kala, Mon.	—	ocelo, Mex.
	lomi, Georg.	... kya, Burm.	... puma, Ak, Q.	...
Wild				
sheep	... dara, Akkad	... akkhoei, Camb.	... taruca, Aym., Q.	
Bird	... khu, Akkad	—	—	quauh, Mex.
	khathami, Geo.	khaton, Mon.	—	
	kattay, Circ.	... kava	—	
Snake	... ti, sir, Ak.	... tharun, Mon.	... katari, Aym.	...
Fish	... kha, khan, Ak.	... ka, Ann.	... kañu, Aym.	... cay, Poc.
	bat(a), Akkad	... para, Siam	—	
Good	... khiga, Akkad	... chia, Camb.	... asque, Aym.	...
	kargi, Georg.	... kha, Mon.	—	qualli, Mex.
	—	—	—	gala, Tara.
	—	gha, Karen,	—	khuta, Tara.
Bitter	... hur(i), Akkad	... khah, Karen, B.	haru, Aym.	...
Sour	... mekave, Geor.	... khom, Siam	—	
Black	... kug(i), Akkad	... khuaun, Camb.	—	akahha, Maya
	mi, Akkad	... mai, Burm.	... chamaka, Aym.	...
Red	... gusci, Akkad	... gau, Karen	... pako, Aym., Q.	... cuz, Mex.
	—	hpakit, Mon.	—	kokoz, Mex.
Great	... enim, nun, Ak.	... thanot, Mon.	... hatun, Q.	... noh, Maya
	makh, Akkad	... miat, Burm.	—	nim, Poc.
	anta, Akkad	... tau, Karen	—	na, ndi, Oth.
	atto, Circas.	—	—	
Give	... she, Akkad	... sho, Ann.	... chu, Aym.	... caa, Maya
	ga? Akkad	... ka, Mon.	... ku, Q.	... kia, Tara.
	mu, Akkad	... peky, Burm.	—	maka, Mex.
Run	... riati, Ak.	... garitaa[aara], Mon.	... huayra, Q.	...
Flow	... rli, Georg.	... pre, Burm.	... [puri, Q.]	...
Go	—	... aara, Mon.	... [humi, Aym., Q.]	... huma, Tara.
Speak	... kaka, Ak.	... nikay, Camb.	—	ynqui, Poc.
	laparako, Geor.	... hankai, Mon.	... arusi, Aym.	...
	—	chho, Burm.	... rima, Q.	...
	—	hanmarai, Mon.	—	
Eat	... ka, Ak.	... chhan, Camb.	... mancana, Aym.	[Tava.
	ja, Georg.	... cha, Burm.	—	qua, Cora, Mex.,
	—	au, Ann.	—	hanal, Maya
Drink	... ka, Ak.	... kenn, Siam	—	hindi, Mixteca
	nak, Ak.	... thou, Mon.	—	chia, Mex.
	sua, Georg.	... sok, Burm.	—	
Die	... khan, khut, Ak.	... mathi, Karen	... amaya, Aym.	... mnechit, Ceva
Kill	... be, ba, bat, Ak.	... kha, Siam	—	miquiz, Mex.
	sikua, Georg.	—	—	mukiki, Tara.
Cut	... kud, khas, Ak.	—	cuta, Aym.	...

	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
Break	... re, Georg.	... rei, Camb.	... rutu, Q.	...
Cry	... tuq(a), Ak.	... toui, Camb.	... huaca	...
Weep	—	khok, Ann.	—	...
Place	... ka, khash, Ak...	—	chura, Q.	...
Put	... ko, thsqo, Georg.	—	cancha, Q.	...
Rise	... ri, Ak.	... mhrang, Burm.	... hatari, Q.	...
Raise	... aka, Ak.	... heka, Karen	... hucaro, Q.	...
Many	... mes, Ak.	... husamia, Burm.	—	miec, Mex.
All	... ka, Ak.	... ahmah, Karen	... [naka, Aym.]	...
	koweli, Georg.	—	[kuna, Q.]	...
No, not...	nu, Ak.	... pnoom, Camb.	... hani, Aym.	...
Negative.	nu, Georg.	... ma, Burm., etc.	... ma, Aym., Q.	... mao, Maya
	—	na, Kumi	—	ma, Poc.

The pronouns are of such varied type and distribution that only a few selections are offered.

	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
I, me	... mu, idbi, Ak.	... awai, Mon.	—	ma, Oth.
	mi, Georg.	—	—	...
	—	nyo, Angka	... na, Aym.	... nuga, Oth.
	—	nga, Burm.	... noca, Q.	... ne, Mex.
	—	kha, Siam, etc.	—	...
Thou	... zu, Ak.	... tua, Siam.	... -ta, Aym.	... tata, Huas.
	shen, Georg.	... tha, Karen	—	mi, Totonaca
	mun, men, Ak.	—	—	timo, Mex.
	weyroo, Circ.	... bai, Mon.	—	pe, Cora
	—	ba, Angka	—	pu, Tara.
	—	nah, Karen	... nqui, Q.	... nugui, Oth.
He	... ni, bi, Ak.	... no, Ann.	... hupa, Aym.	... nunu, Oth.
	[ni, bi, plur. Geo.]	wa.	... pay, Q.	... bi, Oth.
	igi, misi, Georg.	ni, Khyeng	... ni, Aym,	...
	—	pho, Angka	... n, Q.	...
We	... me, Ak.	—	—	ma, Oth.
	—	—	—	tame, Tara
Plurals	... -nene, Ak.	... -aen, Siam	... kuna, Q.	... nana, Huas.
	... -no, Ak.	... -niht, Shan.	... naka, Aym.	...
	... -ni, Georg.	—	—	...
	... -bi, Georg.	... tau, Mon.	... pay, Aym.	... te, Cora
	... -th, Georg.	... dah, Karen	—	...
1...	... id, Ak.	... moe, Camb.	... mai, Aym.	... ce, Mex.
	zee, Circas.	... mway, Mon.	... hue, suc, Q.	... tam, Totomaca
	erthi, Georg.	... mot., Ann.	—	...
	—	tach, Burm.	—	...
	—	ter, Karen	—	...
2...	... bi, Ak.	... bar, Camb.	... pa, Aym.	... poa, Cora
	kas, Ak.	... pa, Mon.	... yscay, Q.	... ome, Mex.
	oh, Circas.	... ki, Karen	—	yoho, Oth.
	ori, Georg.	... kai, Angka	—	os, Tara.
3...	... essa, Ak.	... sung, thou, Bur.	kimsa, Aym., Q.	osh, Huas.
	sami, Georg.	... sam, Siam	—	osh, Maya
	shee, Circas.	... htsan, Shan	—	...
	—	pah, Camb.	—	ba, Tara.
	—	pe, Mon.	—	...
4.	... sana, Ak.	... si, Siam	... pusi, Aym.	...
	—	htse, Shan.	—	...
	—	tse, Angka	—	...
	—	pon, Mon.	—	...
	—	buan, Camb.	—	...

	Western.	Indo-Chinese.	Peruvian.	Mexican, etc.
5...	... sha, Ak.	... ha, Siam, Shan.	ppiska, Aym., Q.	
	para, Ak.	... patson, Mon.	—	
	tpcy, Circ.	... panggna, Kami.	—	
6...	... as, Ak.	... sau, Ann.	... socta, Aym., Q..	
	shoo, Circas.	... sauk, Khyeng.	—	
	ekusi, Georg.	—	—	

DISCUSSION.

Consul T. J. HUTCHINSON being called on by the President, said he was afraid to enter into this discussion in commenting on the deep philological research displayed by Dr. Hyde Clarke, or on the extensive knowledge of warlike instruments, for which Colonel Lane is so well known. But he had his doubts about the possibility of learning the grammatical formations of languages from such tribes as those Dr. Clarke spoke of in Western Africa. Their dialects were all unwritten, and it had been observed by Captain Adams, that the tower of Babel might have been built on the West coast of Africa, so numerous and varied were the idioms spoken there. For his own part he believed in what we have to learn of the anthropology of past people, much more from their works of art, than from what should be considered as guesses at philology. He was happy to tell the meeting that the collection of copper implements, of cloth, of pottery-ware resembling that excavated from Priam's Ilium, by Dr. Henry Schliemann, of silver works of art, and other matters, brought by him from Peru, were now arranged at the Bethnal Green Museum, and in a short time the catalogue of them would be ready.

Dr. LEITNER gave an account of the origin, progress, system, and present attitude of the Indo-Germanic School of Philology, and considered that Dr. Hyde Clarke's researches, which he illustrated by coincidences derived from Arabic and his own Dardu discoveries, as well as those of all scholars and independent inquirers, deserved every encouragement for the sake of the cause of truth, and as a protest against the literary terrorism exercised by a set of Sanscritists, who now monopolised attention in certain leading societies and journals, erroneously supposed to be devoted to impartial investigations. The collection of material, historical, ethnological and other, was far more important than the preservation of this or that philological theory. We were on the mere threshold of the science of language; the Indo-Germanic group was, with some stretching, scientifically classified, whilst the affinities of the Shemitic languages had never been doubted. The terms, however, of "Turanian" and even of "Hamitic" were a mere euphuism to express the absolute ignorance of our present philologers regarding the position to be assigned to that vast number of languages which yet remained insufficiently examined or unknown.

Mr. R. G. HALIBURTON said: I have listened to this discussion with much pleasure, not only on account of the importance of the subject before us, but also on account of the liberal spirit which has been

evinced, for bigotry unfortunately is not confined to theologians, but is often as unreasoning and intolerant in science as it is in religion. Mr. Clarke's conclusion that there has been a connection between the religions and civilizations of the new and old worlds has been confirmed by a very careful investigation of my own, extending over twenty years, into the identities existing between the calendars, festivals, and astronomical ideas of savage races in America, Polynesia, Africa, and Asia. These coincidences are very striking and very conclusive, and I hope before long to submit the result of my labours to the notice of the public. There are proofs that there must have been repeated intercommunication between the races of the new and the old worlds prior to the days of Columbus. So evident is this conclusion that some writers have tried to establish that the origin of the religions and the civilisation of the old world must be sought in America. We have in the new world monuments of the stone age similar to those found in Denmark and elsewhere. We have coincidences in the calendars of the races inhabiting both continents which cannot be accidental. In architecture the resemblances are most striking. The grouping of Mexican pyramids I have found to be the same as that observable in Egypt, and a similar symbolism is to be traced in some of the groups of mounds in the new world, which is to be noticed in prehistoric structures of the old. We have Cyclopean masonry in Peru, and symbols which are conspicuous in the temples of the old world. There can be no doubt that we are on the eve of important discoveries, and Mr. Hyde Clarke by his valuable paper has pointed out very clearly how much we have to learn, and how much remains to reward the labours of the Anthropological Institute.

Mr. J. JEREMIAH, Jun., said, in reference to the remarks of Mr. Haliburton, in relation to his labours in American archaeology, and his conclusions respecting the astronomical characteristics of the Mexican and Egyptian pyramids, that in a work in his collection, entitled "The Lost Solar System of the Ancients Discovered," by a Mr. John Wilson, published (in two volumes) as far back as 1856, the same conclusions are stated; but how far correct he was not this evening prepared to say. The work abounds with apparently accurate measurements of all the then known great megalithic monuments in Europe, Asia, Africa, and America, and elaborately detailed and worked out, to show that they were constructed in accordance with the Oriental astronomical system, and it may be remarked that the valuable paper we have listened to goes very far to support some of Wilson's arguments. It seems a pity that the labours of years at times turns out to be already forestalled in the main by some unknown work published years ago, as in the case of the honourable gentleman who preceded me. Mr. Hyde Clarke has proceeded upon strictly scientific grounds, and whether we premise the descent of the human family from one or more pairs, his researches will always afford the student much material for carrying on the impartial study of the history of man in the vast continent of America, and assist the comparative

study of the progress of the human mind in every part of the ancient world.

Colonel LANE FOX, Senor de la ROSA, and the PRESIDENT also made some remarks.

The author replied and the meeting separated.

JUNE 9TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The Minutes of the previous meeting were confirmed.

W. SELBY CHURCH, Esq., M.D., 2, Upper George Street, Brynaston Square, was elected a Member.

The following List of Presents was read, and the thanks of the meeting were voted for the same.

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société Imperiale des Naturalistes. No. 3, 1873.

From the SOCIETY.—Jahrbuch der K.K. Geologischen Reichsanstalt. Vol. xxix, No. 1, 1874. Verhandlungen, do., Nos. 1-6.

From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien, iv Band. Nos. 1 and 2.

From the SOCIETY.—Proceedings of the Asiatic Society of Bengal, No. 1, Jan. 1874. Journal, do., Part i, No. 4.

From the EDITOR.—Revue Scientifique, Nos. 48 and 49, 1874.

From the INSTITUTION.—Journal of the Royal Institution of Cornwall, No. xv, April 1874.

From the SOCIETY.—Proceedings of the Royal Society. Vol. xxii, No. 152.

From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. iii, No. 17.

From F. V. HAYDEN, Esq.—United States Geological Survey of the Territories for 1867-8-9.

From the SOCIETY.—Proceedings of the American Philosophical Society. Transactions, do., Vol. xv, Part i.

From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. xviii, No. 76.

From the ASSOCIATION.—Journal of the East India Association. Vol. viii, No. 1.

From the EDITOR.—Nature (to date).

The following papers were read by their respective authors :

NOTES on the DISCOVERY of STONE IMPLEMENTS in EGYPT. By Sir JOHN LUBBOCK, Bart., F.R.S., V.P.A.I., M.P., etc. [With Plates xiii-xvii].

IN February 1869, M. Arcelin communicated to the "*Matériaux pour l'Histoire de l'Homme*", a note in which he announced that, in conjunction with M. le Vte. de Murard, he had found in various localities along the Nile valley a series of rude stone implements resembling those of Western Europe. In this note he expressed no opinion as to their age, except that they were certainly not recent ; but, in a report to the Minister of Public Instruction, dated on the 26th June of the same year, and published also in the "*Matériaux*", he concludes as follows:—

"Je me vois donc autorisé à conclure de ce qui précède à l'existence, en Egypte, d'une industrie fort ancienne, probablement préhistorique, qu'il faudra peut-être scinder elle-même en plusieurs époques, mais qui, à la station d'Abou-Mangar, s'est affirmée avec les caractères connus de l'âge dit de la pierre polie. Des fouilles postérieures nous apprendront s'il faut attribuer ces débris aux ancêtres des Egyptiens ou à leurs prédécesseurs dans la vallée du Nil."

In the same year, MM. Hamy and Lenormant found many rude flint implements (hachettes, couteaux, grattoirs, percoirs, nucleus, percuteurs, etc.) on the hills overlooking the tombs of the kings at Thebes, and subsequently a hatchet of the St. Acheul type at Deir-el-Bahari. M. Hamy communicated these facts to the Soc. d'Anthropologie of Paris,* expressing his conviction that the specimens in question belonged to the true stone age, in which view he was supported by M. de Mortillet, and M. Broca ; while, on the contrary, M. Pruner-Bey, though leaning to the same conclusion, thought that more evidence was required.†

M. Lepsius, in his "*Ueber die Annahme einer sogenannten prahistorischen Steinalten in Aegypten*",‡ has, on the contrary, expressed the opinion that the flint-flakes, etc., found in such abundance at Bab-el-Meluk and elsewhere, are natural flint fragments, splintered by the alternation of temperature. He asks why, if they are artificial, should so many have been left neglected on the ground: "*Was soll man sich von einer Industrie für eine Vorstellung machen, welche hunderte und tausende ihrer*

* "*Bull. de la Soc. d'Anthrop. de Paris*," p. 685. 1869. See also, vol. v, 1870, p. 15.

† *Loc. cit.* pp. 703-19.

‡ *Zeitschrift f. Agypt. Sprache und Alterthumskunde*, 1870. See also "*Berliner Ges. für Anthr. Ethn. und Urgeschichte*" Mar. 1873.

fertigen Producte nicht des Aufhebens für würdig hält, sondern unbenutzt liegen lässt".* Why are no better-worked specimens met with. As regards the so-called scrapers, he doubts whether they could ever have been used in the manner supposed. He maintains that the secondary fractures or chippings on many of the supposed implements are fresher, of a different colour, and therefore evidently of more recent origin than the main fractures.† Even, however, if these implements were of human origin, they would, he maintains, be no evidence of an Egyptian stone age, because we know that stone knives were used for certain ceremonial purposes even during historical times, and stone implements are sometimes found in Egyptian tombs. Rosellini, the companion of Champollion, mentions that on several occasions he found flint-flakes with mummies; and M. Lepsius himself found six flakes in the tomb of Snetemhet, a functionary of the fifth dynasty.‡

M. Chabas also has expressed a decided opinion§ that the Egyptian stone implements are of comparatively modern date, that they belong to the times of the Pharaohs, and do not in any way indicate the existence of a stone age in Egypt. M. Chabas is so great an authority on Egyptian archaeology, that his opinion is entitled to great respect; still, it may be observed that the study of stone implements is very distinct from that of hieroglyphics, and it must be remembered that M. Chabas denies the existence of any evidence of a stone age even in Western Europe. His opinion with reference to the Egyptian stone implements is part of a general theory, which it is not necessary for me here to discuss, especially as I believe that very few of those who look into the evidence will agree with M. Chabas on this point.

But though M. Chabas' opinions as to the Egyptian stone implements have probably been, even if unconsciously, modified by his general views, he gives special reasons for the conclusions to which he has arrived. Thus he figures a stone knife of steatite, on which is an inscription in hieroglyphics, "Sam oer kherp abon Ptalmes"; that is to say, The great Sam, the chief of artists, Pthahmes. This stone implement cannot, therefore, he says, be earlier than the Scrite dynasty. But this stone knife is not of a characteristic stone-age form. We know from ancient historians that in preparing the dead for burial, an incision was made in the side with a stone knife. I think it very probable that the knife in question may be no older than the date assigned to it by M. Chabas. But the inscription is no proof. Where,

* *Loc. cit.* p. 95.

† *Loc. cit.* p. 113.

‡ See also Hamy, "*Bull. Soc. Anth. Paris*," p. 711, 1865.

§ "*Etudes sur l'Antiquité Historique*." Paris, 1872.

indeed, as in the case of the celebrated bronze celt in the Museum Kircherianum at Rome, a bronze implement was *cust* with an inscription, the inscription and the implement must be contemporary; but letters may be engraved on a stone implement at any period. Mr. Evans has a German stone axe, with an inscription of the 16th century; but no one would regard this as a proof that stone axes were used in Germany three hundred years ago.

M. Chabas asks, with surprise, what could have been the use of the small flakes found in Egypt, as well as elsewhere, and suggests that they may be merely "des essais d'habiles ouvriers cherchant à vaincre des difficultés dans leur art". Small flakes, however, were used for various purposes, such, for instance, as in preparing clothes, arrow-heads, etc. They were also used for the tips of spears and javelins, being let into slits in the side of a piece of wood. Such implements have been found in various parts of the world.*

M. Chabas agrees with M. Lepsius, that many of the Egyptian flint-flakes are natural, and due to the action of the sun.† As, however, he admits that the Egyptian specimens figured by M. Arcelin, are really of human workmanship, the point is not of importance; and I shall, therefore, merely express my opinion that no one who has specially studied stone implements will have the slightest doubt on this point.

Last year M. Arcelin published a reply to MM. Lepsius and Chabas, under the title "L'Age de pierre et la classification pré-historique d'après les sources Egyptiens", in which he reiterates his views and combats their arguments.‡

Under these circumstances, I was extremely anxious to visit these interesting spots, and by an inspection of the localities themselves, to form, if possible, an independent judgment. Last autumn I was so fortunate as to visit Egypt; and, thanks to the kindness and hospitality of the Khedive and Nubar Pacha, had every facility for seeing the places of interest under favourable circumstances. I found worked flints at various spots along the valley; especially in the Valley of the Tombs of the Kings, at Thebes, and at Abydos; and, after carefully considering the facts and arguments brought forward by MM. Lepsius and Chabas, I am disposed to agree with MM. Arcelin and Hamy in considering that these flint implements really belong to the stone age, and are ante-Pharaonic.

Dr Lepsius will, I hope, excuse me if I do not think it neces-

* See Nilsson, "On the Stone Age," pl. vi, figs. 124-126; "Prehistoric Times," 3rd ed., p. 442, etc. † *Loc. cit.* p. 389.

‡ Mariette Bey also considers that these flint flakes, etc., belong to the historic period. "Bull. de l'Inst. Egyptien," 1869-71; quoted in the "Mat. p. l'Hist. Prim. de l'Homme," 1874, p. 16.

sary here to enter into the question, whether flint-flakes, such as those in question, are of human origin, or mere natural fractures. The point has been discussed many times, and I am surprised that anyone should have a doubt on the subject. With reference to this part of the subject, I will, therefore, do no more than refer to the specimens themselves, some of which are represented in the accompanying plate. It is not, however, the case, as supposed by M. Lepsius, that perfect or serviceable implements are to be found strewn on the ground by hundreds and thousands. What we do find are waste flakes struck off in the manufacture, with here and there an unfinished implement or part of an implement. Bab-el-Meluk, Abydos, etc., exactly resemble in this respect Pressigny, Grimes, Graves, and the other European stone-implement manufactories with which I am familiar. If it be objected that the same doubt applies to these, I may add that the same is true, *mutatis mutandis*, of localities where flint is still worked, either for gun-flints, as at Meunes or at Brandon, both of which I have visited; or by modern savages, as shown, for instance, in the figure of an Australian given in "Prehistoric Times" (third edition, p. 88).

Neither will Dr. Lepsius' third objection hold good: namely, that no better-worked specimens are met with. Many we should not expect to find under such circumstances; some few do occur. Dr. Lepsius doubts whether the so-called scrapers could ever have been used in the manner supposed. To this it seems sufficient to reply that exactly similar implements are used for the purpose by the Esquimaux of the present day.

Dr. Lepsius also asserts that the secondary chippings in the specimens collected by him, were of a different colour from the main fractures, and therefore of much more recent date. Of course I do not doubt that this was the case with those collected by Dr. Lepsius. Unfortunately, however, he contented himself with ten specimens: "Auf dem bezeichneten Felde nun, über Bab-el-Meluk, brauchte auch ich mich nur zu bücken, um nach Belieben Massen von Messer ähnlichen Splintern aufzuheben. Ich begnügte mich mit den 10 Proben, die auf eine der nächsten Nummer herzufügenden Tafel photographisch dargestellt sind."* I can only say, that these specimens must have been exceptional. In the hundreds which I have examined, the fractures are similarly coloured, and obviously coeval; as indeed the Society will see in the specimens now exhibited.

The question still remains, whether these implements are prehistoric, and belong to a true stone age, or whether they are referable to more recent times. No doubt stone arrow-heads and hammers come down to a comparatively late date; and flint

* *Loc. cit.* p. 95.

knives were used in opening the corpse for embalming. Flakes, also, have been used occasionally in Egypt, as well as elsewhere; but I see no reason to believe that, since the time of Menes, stone has been habitually used in Egypt for cutting purposes. I carefully looked in all the ancient ruins we visited, and on the rubbish-heaps which mark the sites of old towns; but while broken pottery is strewn about in wonderful profusion, fragments of stone implements were entirely wanting. The considerable excavations which have recently been carried on in Egypt, render the present rather a favourable time for such observations. Those who have visited the sites of ancient stone-age villages, not merely manufactories such as those at Pressigny or Brandon, but stone-age settlements or camps, know well how abundantly the fragments of stone implements are scattered on the surface in such situations. Flint implements are very brittle, and, though no doubt in localities far removed from natural flints, the fragments were often worked up again, in districts where flint is abundant, they were absolutely worthless, and left to lie unnoticed. The scarcity, therefore, I might almost say the absence, of stone implements among the rubbish of the ancient Egyptian cities, is a stronger argument than might at first sight appear, against the general use of stone implements in historical times.

The forms of the implements we found, as will be seen by the descriptions and figures, closely resemble those of Western Europe. I found them on the slopes of the hills, and on the lower plateaus, above the level of the inundation, wherever flint was abundant and of good quality. M. Arcelin mentions that, at Abon-Mangar, a little below Assouan, "*le gisement se prolonge sous les sédiments modernes; qu'il ne passe pas dans ces sédiments où je n'ai trouvé aucune trace de pierre taillée.*" I had no opportunity of verifying the important observation, that the layer of flint implements was continued under the alluvial soil, but it certainly did not extend over, nor as far as I could see into it. I conclude, therefore, that these implements certainly may have, and probably did, belong to the true stone-age. I may observe, also, that the use of stone knives by the Egyptians for certain ceremonial purposes, can only I think, be accounted for by regarding it as a "superstition" in the literal sense: a continuation of an old custom. If the ancient Egyptians had been accustomed for ages to use stone knives in the preparation of mummies, we can understand their reluctance to alter an immemorial custom, and make use of a new substance such as bronze. This very fact, therefore, seems to me an indication that they had passed through an age of stone, and had even made considerable advances in civilisation before they were acquainted with the use of metal.

I will now proceed to describe some of the specimens. No. 1 is a light brown nucleus $2\frac{1}{2}$ inches broad and $1\frac{1}{2}$ high. It was apparently an oval nodule, which has been split across the middle. One side and the upper end still show the original surface of the pebble; from the other sides a succession of flakes have been struck. There are now eight facets. It contains two nodules of cherty flint, which possibly may have caused it to be rejected. It was found on the hills overlooking the valley of the kings at Thebes.

No. 2, pl. xiii, figs. 1, 2, is a light brown scraper, $2\frac{1}{4}$ inches long, $1\frac{3}{4}$ broad, somewhat spoonshaped, and very similar in form to the ordinary scrapers of Western Europe, and to those still used by the Esquimaux.* It is chipped at the extremity only.—Thebes.

No. 3, pl. xiii, fig. 3, is a flat flake of irregular form, much chipped at the edges; 4 inches long, $2\frac{1}{4}$ inches wide, and of a dark brown colour.

No. 4, pl. xiii, figs. 4, 5. This specimen is, unfortunately, imperfect. It is flat and thin, being carefully worked not only at the edges but on both sides. It is $2\frac{1}{2}$ inches broad, $\frac{3}{16}$ inch thick, and the remaining portion is $1\frac{1}{2}$ inches in length.—Abydos.

No. 5, pl. xiii, fig. 6, is a flat circular disc, $1\frac{3}{4}$ broad, $\frac{1}{16}$ inch in thickness. It is light brown, and the two faces are flat; but as the side fractures slope somewhat, one is rather larger than the other. This specimen closely resembles some of our "sling-stones".—Abydos.

No. 6 is a worked flint of the same type as the last, but larger, and less regular. It is $2\frac{3}{16}$ inches in diameter, and $\frac{1}{16}$ inch thick. The upper surface is somewhat hollow.—Abydos.

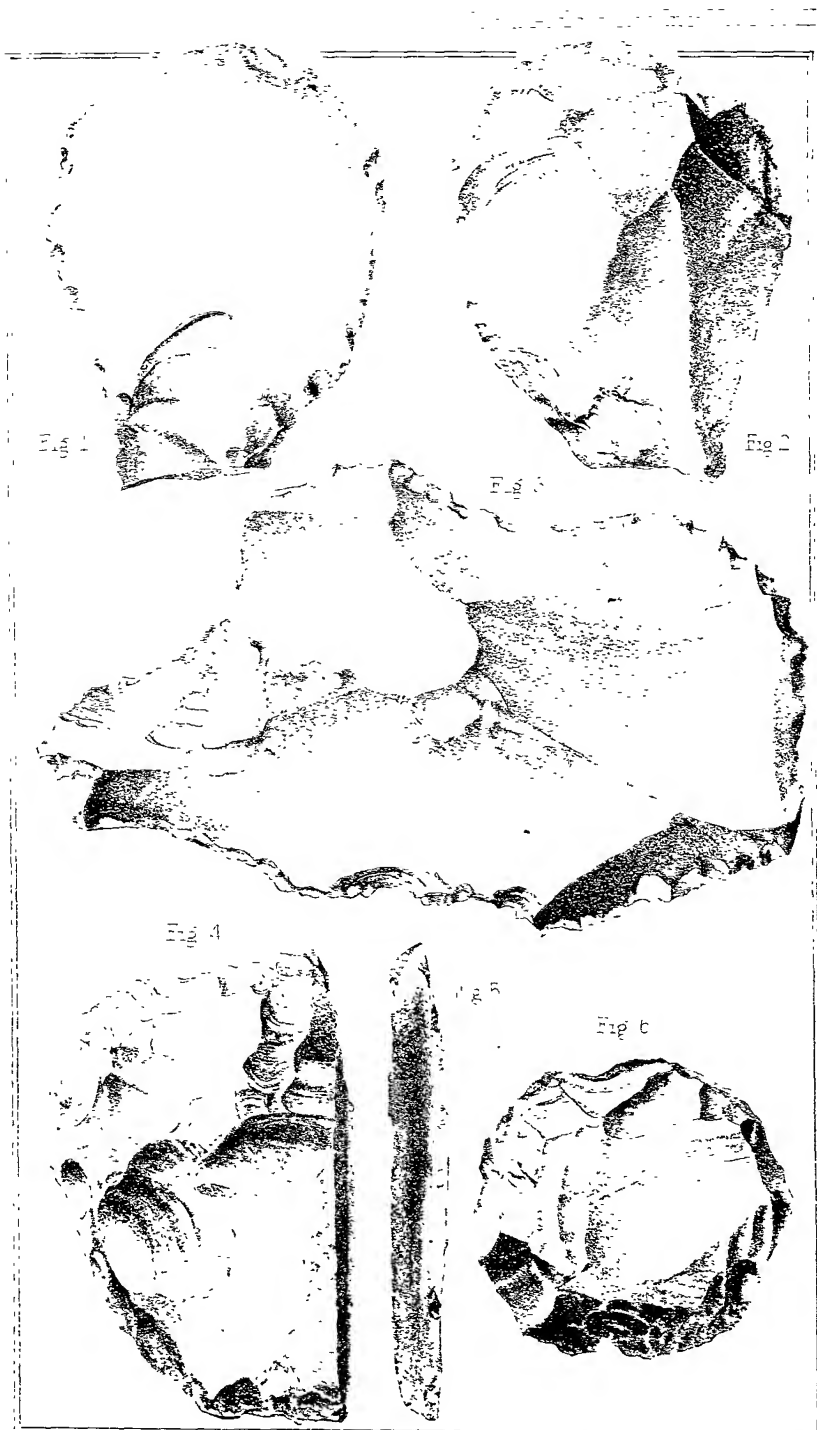
No. 7, pl. xiv, fig. 1, is a leaf-shaped flake, of brown flint, $2\frac{1}{2}$ inches long, $1\frac{8}{16}$ broad, and $\frac{1}{16}$ inch thick. It is chipped up on both sides near the point.—Abydos. This specimen, like the others from the same locality, was found on the low hills above the level of the inundation, behind the temple.

No. 8, pl. xiv, fig. 2, is a reddish-brown scraper, 2 inches long by $1\frac{3}{4}$ broad. It has a single ridge running down the centre, and shows marks of use on both sides, as well as at the end.—Thebes.

No. 9, pl. xiv, fig. 3, is a dark-coloured flake, 4 inches long by $1\frac{3}{4}$ wide. It is an outside piece, and, like the preceding, has been worked up into an "awl" at the apex. At the butt the bulb of percussion is well-marked.—Thebes.

No. 10, pl. xiv, fig. 4, is a reddish-brown flake, 4 inches long by 3 wide. It is flat on one side, has a central ridge on the other,

* See "Prehistoric Times," 3rd ed., p. 97.



IMPLEMENTS FROM EGYPT.

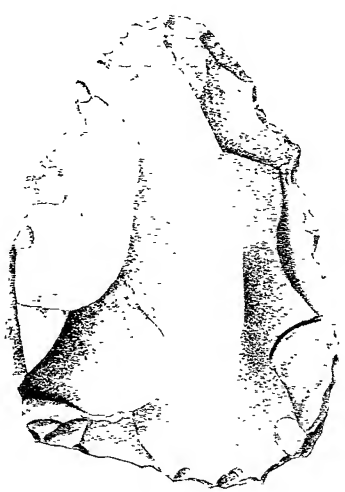


Fig 1



Fig 2



Fig 3

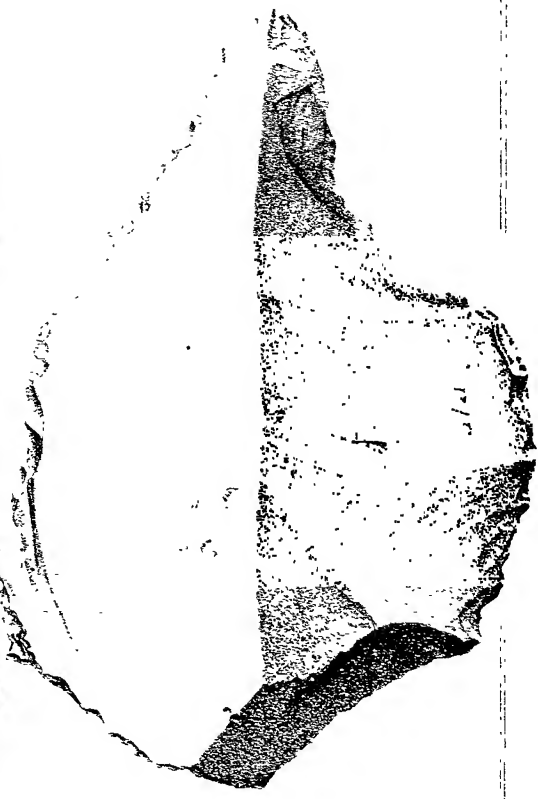


Fig 4



IMPLEMENTS FROM EGYPT.



IMPLEMENTS FROM EGYPT.



and is brought to a point at one end, like the so-called awls of Western-Northern Europe. It shows marks of use on both sides.—Thebes.

No. 11, is an oval spoon-shaped scraper, the butt of which is chipped so as to form a sort of tang. It is $2\frac{1}{4}$ inches in length, $1\frac{1}{10}$ in breadth, and of pale brown colour.—Thebes.

No. 12, pl. xv, figs. 1 and 2, is a broad scraper, formed of the outside of a rough nodule. The bulb is large. The length and breadth are nearly equal, $2\frac{3}{4}$ inches.—Abydos.

No. 13, pl. xv, fig. 3, is a flake of grey flint, $3\frac{1}{4}$ inches long, $\frac{9}{10}$ inch wide. The flat side has the bulb of percussion well-marked, and shows traces of work along both edges.

No. 14, pl. xv, fig. 4. Is a reddish-brown, thin flake, $2\frac{3}{4}$ inches in length, and $1\frac{1}{8}$ in breadth. The flat side has the bulb of percussion well-marked, and the edges show marks of wear.—Thebes.

No. 15, pl. xv, fig. 5, is a rather thicker oval flake, $2\frac{3}{4}$ inches long, 1 wide, with a well marked bulb. It is of a dark brown colour.

No. 16, pl. xv, fig. 6, is a flake of veined flint, somewhat curved in the form of an S. One edge of the convex side shows the original surface of the nodule, the other is chipped. It is 3 inches long, and 1 broad.—Abydos.

No. 17 is a thin broad implement, 4 inches long by $2\frac{1}{2}$ wide. One side is flat, the other shows several facets, and presents marks of use all round the edge.—Thebes.

No. 18, pl. xvi, fig. 1, is a chocolate-coloured, leaf-shaped implement, closely resembling some of the St. Acheul specimens, but of rather fine workmanship; the shape being given by a great number of facets. A small portion of the original surface is still visible near the butt. The form is not very regular, the point being to one side. It is 4 inches long, and $2\frac{1}{8}$ broad.—Thebes.

No. 19, pl. xvi, fig. 2, is also an implement of a St. Acheul type, but thinner than usual. It is $3\frac{3}{4}$ inches long by $2\frac{1}{4}$ wide, and not more than $\frac{3}{4}$ inch thick. It is dark coloured, but on a great part of one side the greyish chalky outer covering of the flint, from which it was made, still remains.

No. 20, pl. xvi, fig. 3. This specimen also closely resembles one of the smaller, oval, St. Acheul implements, though one side is rather flatter than is usual among the French specimens. It is well worked, and the edges are somewhat rubbed down by the drifting sand. It is of a chocolate colour, $3\frac{1}{4}$ inches long, and $2\frac{1}{2}$ wide.—Abydos.

No. 21, pl. xvii, fig. 1, is a dark brown flake, 3 inches long by $1\frac{1}{4}$ wide. It has a well-marked bulb of percussion on the flat side;

the other shows three main facets. It has been brought to a point, and shows marks of use along both edges.

No. 22, pl. xvii, fig. 2, is broader, and tapers more towards the point, which, however, has been broken off. It is $2\frac{3}{4}$ inches long, $1\frac{3}{4}$ broad, and shows marks of wear along both edges.

No. 23, pl. xvii, fig. 3, is a dark brown, thin plate, $2\frac{1}{2}$ inches long by $\frac{3}{4}$ wide, and has a well-marked bulb of percussion.

No. 24, pl. xvii, fig. 4, is a broad, flat, dark brown flake, 3 in. long, by $1\frac{3}{4}$ wide. The flat side has a well-marked bulb of percussion; the upper surface shows several facets, and the edges are much worn.

No. 25, pl. xvii, fig. 5, is a flake of the same dark brown colour, $2\frac{3}{4}$ inches long by $1\frac{1}{2}$ in width. It has a well-marked bulb of percussion on the flat side, and a midrib on the other. It has been brought to a blunt point at the apex, and the edges are much worn, especially the left side, which is even considerably hollowed out.

The figures are all of the natural size.

DISCUSSION.

The Rev. J. G. Wood, in reply to Mr. Frank's remarks respecting the so-called skin-scrapers of the Esquimaux, which were now asserted to be planes used for the purpose of smoothing wooden weapons and implements, asked for an explanation of the recent change of name. He thought it very remarkable that a special tool should be invented for smoothing wood, whereas trees do not grow in the country of the Esquimaux, who are indebted to drift-wood for all their wooden implements. He thought that the bone articles would make very good skin-scrapers, and stated that, on the authority of the Christy collection, of which Mr. Franks was the curator, he had engraved the articles in question, and published them as Bone Scrapers in his "Natural History of Man."

Colonel A. LANE FOX, in reply to some comments made by Mr. Franks, said that although he concurred in thinking that some of the forms usually known by the name of scrapers were used as planes, that is to say with a forward motion, others he thought, from the manner in which they were hafted by the Esquimaux, must be used as scrapers, with a backward motion towards the body. The bone handles in which some of these scrapers were placed by the Esquimaux, some of which he had in his collection, had a bend in them, by which the edge of the flint was presented at right angles to the object to be worked, and in this position the cutting or scraping could only be performed by a backward motion. No doubt the scrapers were used for a variety of purposes, and their great abundance on the surface shows that they must have served the purpose of a general tool in prehistoric times.

Contributions to the ETHNOLOGY of EGYPT. By PROFESSOR OWEN, C.B., F.R.S., Honorary Member of the Anthropological Institute of London, etc. [With Plates xviii, xix, xx, xxi.]

To determine the local origin and physical characters of the race which initiated administrative government, ethics, religion, arts, and sciences in Egypt, and the period of such initiation, is an aim of more than ordinary interest in Anthropology. To obtain evidences thereon, acceptable to, or regarded as reliable by, cultivators of the science, has been amongst my pursuits during winter sojourns on the Nile.

Different opinions and beliefs have been mooted at different periods on these questions, from the time of the Ven. Archdeacon Squire, who affirms that "Egypt was colonized about 130 years after the flood by emigrant Asiatics, descendants of Ham or Cham the son of Noah;"* to the issue of the volume for 1871 of the "Journal of the Ethnological Society of London," in which a biologically eminent fellow member, who has himself visited Egypt, affirms the aborigines of the ancient civilised people of the country to have been of the physical type or pattern of the natives of Australia. "For," writes Professor Huxley, "although the Egyptian has been much modified by civilization, and probably by admixture, he still retains the dark skin, the black, silky, wavy hair, the long skull, the fleshy lips, and broadish alæ of the nose, which we know distinguished his remote ancestors, and which cause both him and them to approach the Australian and the 'Dashyu' more nearly than they do any other form of mankind." †

Facts supporting the above asserted knowledge of the distinguishing characters of the remote ancestors of the Egyptians will be acceptable.

The latest observations recorded on the race-characters of the ancient Egyptians are by Pruner-Bey, in 1861, ‡ mainly based on those of skulls. Since that date, other evidences of value in anthropology, and, as I deem, of a more instructive kind, have been discovered, chiefly by Mariette-Bey, Director of the Service of Conservation of the Antiquities of Egypt. The results of a study of these evidences, for the most part in the Khedival Museum at Cairo, I propose to submit, with some remarks, to the Anthropological Institute.

They consist of "Portrait Sculptures," in the form of statues,

* Preface to his "Translation of Plutarch, 'De Iside et Osiride,'" p. 5, 8vo, 1744.

† Tom. cit. p. 405.

‡ "Recherches sur l'origine de l'Ancienne Race Egyptienne;" "Mémoires de la Société d'Anthropologie," 8vo, Paris, tome i, plates xii, xiii, xiv.

heads of sphinxes, and bas-relievos ; chiefly of statues discovered in tombs, accompanied by hieroglyphic inscriptions revealing the name, condition, and usually the date or life-period of the individual ; the latter being inferred from the name of the Phra or king in whose reign the individual had lived. In some instances, two or three successive Phras are recorded in relation to a deceased servant. Such royal "name-shields," when repeating names of kings given in the Manethonian lists, become valuable testimonies to the truth of those lists, and give the dynasty in which the individual represented by the statue had lived and died.

In ascending the Nile from Cairo, one comes, about midway between that city and Beni-souef, upon one of the very old extant pyramids, or rather its nucleus ; it is called the "false pyramid," or "pyramid of Meydoun." In the ancient graveyard, of which this royal cairn is the centre, a contiguous and humbler tomb was discovered. It contained two seated statues ; one of a prince, called *Ra-Hotep*, the other of a princess, or "relation of the king," called *Nefer-t*. They lived, as the hieroglyphic inscription yielding their names tells, in the reign of Pharaoh or Phra *Snefrou*, the last king of the third dynasty, and the predecessor of Cheops, the first of the fourth (according to Manetho), and the builder of the great pyramid at Ghizeh. The photographs which I exhibit (subjects of Plate xviii), may enable the Institute to test, in some measure, the accuracy of the anthropological notes taken from the originals. I can vouch, from personal observations, for the opportunity of which I am indebted to Mariette-Bey, for the authenticity of these evidences, now in the "Musée d'Antiquités" at Boulak, in their bearings upon our science.

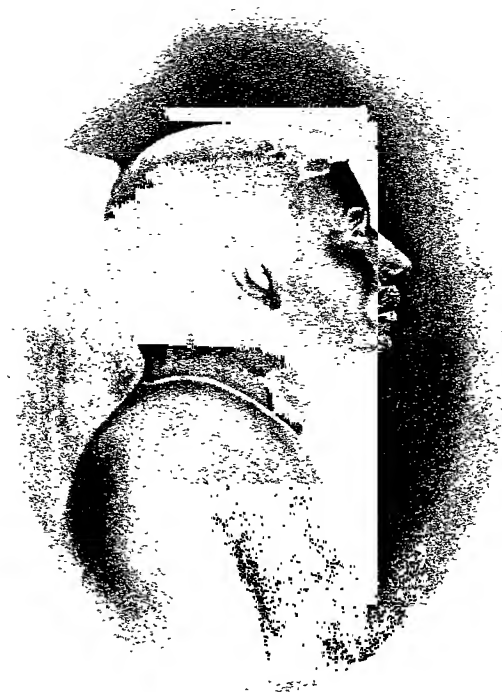
These statues, of hard calcareous rock, are sculptured in a bolder, more natural, style than the art was subsequently reduced to in relation to religious or sepulchral subjects.

The princess sits with her arms crossed beneath the bosom, the left hidden under the garment which clothes her from the neck to near the ankles ; the right hand protrudes at the bosom-slit, and rests on the left arm.

The prince has the right arm similarly bent and placed, but the hand is closed ; the left arm rests upon the left thigh, and holds what seems to be a roll, probably representing the papyrus, containing, perhaps, more or less of the Egyptian "burial service" or "ritual of the dead."

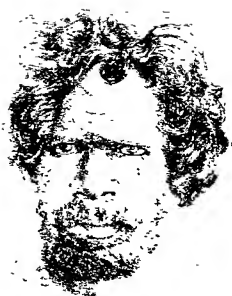
These statues are coloured ; that of the male with a reddish ochre, of the tint which indicates in all later representations the chocolate brown complexion of the Egyptian as contrasted with the yellow, representing the lighter complexion of the Syro-

1.



2.





Aramæan races—Assyrians, Philistine or Palestine people, nomad Arabs—and still more contrasted with the black of the Berbers, Nubians, and Soudan Negroes; these strongly differentiated groups of mankind being so represented together in ancient Egyptian frescoes, of the time of Thotmes III, which may be seen in the British Museum. As early as the Sixth Dynasty, certain soldiers serving in the Egyptian army were designated by the term always applied to the "negro", in contradistinction to that of their lighter complexioned masters.

The statue of the female is coloured of a lighter tint than that of the male, indicating the effects of better clothing and less exposure to the sun. And here it may be remarked that the racial character of complexion is significantly manifested by such evidences of the degree of tint due to individual exposure. The most favoured female of the harem of an Ashantee king, or a princess nearest in blood, in whatever degree protected from the outer influences on skin-colour, shows as deep and glossy a black as the king himself or his meanest slave. The primitive race-tint of the ancient Egyptians is, perhaps, more truly indicated by the colour of the princess in these painted portrait-statues of a pair who lived more than 6,322 years ago,* than by that of her scantily clad husband or male relative.

The brain-case of the male conforms to the type of the skull of the individual of the fourth dynasty, subsequently to be described (Plate xxi.) Horizontally, it is a full oval, the parietal bosses feebly indicated; in vertical contour the fronto-parietal part is little elevated, rather flattened than convex; the frontal sinuses are slightly indicated; the forehead is fairly developed, but not prominent. The hair is close clipped, gives an appearance, probably deceptive, of its being naturally short, and crisp; but, as it afforded the material for the protective and ornamental wig, it must have been longer and more flowing than in the Negro race, to furnish the tiers of seemingly artificial curls in the wig of the male, sculptured with that head-gear in the photograph of No. 497, which I shall presently show. This character of length of hair is still more marked in the wig in which the princess (Plate xviii, fig. 2) has been sculptured, the nature of which is demonstrated in the well-preserved specimen of one of those protective coverings in the British Museum†. The sexual character of difference of length of hair

* I accept the results of the manifold evidences which, since hieroglyphics could be read, have accumulated, with concurrent force, to dissipate the denials, doubts, and glosses of believers in the fact and date of the pentateuchal deluge.

† The conditions of the climate of Egypt led to the fashion involving the refreshing comfort of sitting in-doors without the wig, and protecting the head out of doors with it, as the present inhabitants do with the turban or fez.

in the primitive Egyptian race is significantly indicated in the statues of Nos. 497 and 367 in the museum at Cairo.

The face of Prince Ra-hotep (Pl. xviii, fig. 1) shows a feeble depression between the forehead and the root of the nose; this feature is prominent, with a slight convex curve, of good medium proportions; the *alæ* not broad, but delicately modelled. The lips are fuller than in the majority of Europeans, but the mouth is not "prognathic." On the upper lip the moustache is indicated by a delicate line of black colour. This is not seen in portrait sculptures or pictures of a later period. The cheeks are not unduly prominent. The chin is well formed, but small or delicate. The ear is represented in a more natural position than at a later period, in the sculptures of which it is raised, conventionally as it seems, to an unnatural height above the auditory foramen. No skull of Egyptians at any period of their history has justified this singular departure from nature, the only one, it must be admitted, which we can charge against the sculptors of the middle and later Empires, and one to which the ancient artist of the third dynasty was not compelled. The body of the prince shows the characteristic squareness of the shoulders, still to be noted in the Fellaheen. The legs, especially the ancles, are relatively thick, with muscular "calves." He wears a simple necklace to which some small ornament is appended.

The features of the female (Plate xviii, fig. 2) conform in the main, or as to type, with those of the male, but show more delicacy and finish. The nose, of perfect proportions, is also slightly arched; the lips rather full, the chin well turned but small. The eyebrows are more definitely marked than in the male.* Above these her own hair is parted Madonna-wise, beneath the manifold long, slender ringlets of the voluminous wig, which is encircled above the brow by a jewelled tiara, the gems, coloured green and red, being set in a silver or white coloured band. She wears three necklaces, dark bordered with white, the third and lower one broader, and having suspended to it the series of (gold?) appendages, which is the type of the higher-class Egyptian necklace at the present day.

Woven tissues would seem to have been rare and costly at this period of Egyptian history. Instead of the turban-stuffs, the material of hair was economised for the wig. Princess Nefer-t is clad in a single light, sleeveless garment, suspended by shoulder-straps, and reaching to near the ankles. A narrow slit, continued from the neck to a point between the breasts, is the only bare part of the bosom. The Prince wears the simple kilt, the common clothing of all men of the ancient empire from the Phra downward.

* Perhaps due to the sexual use of pigment.

Clothe Ra-hotep in ordinary modern morning costume, and he would pass "On Change" as less differentiated from the busy Europeans there than any descendant of the Hebrew race.

The princess, in ball costume, would be an admired member of a fashionable "at home," and as little suggestive of distinction, much less inferiority, of race, from any of the fairest present, save in so far as her natural complexion might tell of a more southern birthplace.

And these are the people whom we are bidden, as Ethnologists, to regard as "Australioids" by race; and, as children, were taught to believe were "descendants of Ham,"—degraded blacks!

I next exhibit two photographs of a statue in wood, about half the natural size (3 ft. 10 ins. high), erect, the right arm pendant, grasping the usual mortuary papyrus; the left arm bent, and holding the staff of authority of a priest or high official of the fourth dynasty. The kilt or petticoat reaches below the knees, the upper girding part is brought out and hangs as a free fold in front (Plate xx, figs. 1, 2, 3). The perfect modelling, easy natural pose, of this statue attract the admiration of every beholder with the faculty of appreciating the true and beautiful in art. Of it Mariette writes: "Rien de plus frappant que cette image en quelque sorte vivante d'un personnage mort il y a six mille ans. La tête surtout est saisissante de vérité. De son côté le corps tout entier a été traité avec un sentiment profond de la nature. Nous ne possédons certes pas de portrait plus authentique et plus parlant."*

It is impossible to resist the impression that you see the likeness of the very man himself—nothing conventional affects the features; they are those of a well-fed man of business, firm, but just. He is without his wig; the hair, as usual, close cropped or shaved. The brain-case shows the same type as that of the preceding statue; it is a little broader, and more convex lengthwise, above; containing a rather better developed organ. The nose is less aristocratic; the concave predominating over the convex terminal part of the outline, but the alæ are not broader than in the Caucasian type; the lips are rather less prominent or fleshy than in Ra-hotep; they are firmly closed; the chin is more developed, and somewhat deeper. There is no trace or indication of moustache or beard; all seems close-shaved. The ears, again, are in their true position. He wears no necklace or other ornament. The general character of the face recalls that of the northern German; he might be the countryman of Bismarck. Without corpulency, the

* "Notice des Principaux Monuments, etc., du Musée d'Antiquités Égyptiennes," 8vo, 1872, p. 159.

well-nourished frame and breadth of chest make the square shoulders of his race less distinct or less marked than in most of the statues. The legs are stout, with well-marked gastrocnemii (Plate xx, fig. 1).

In the same mausoleum at Sakkara, Mariette found a statue, in wood, of a female, of half the natural size, seemingly from its style by the same artist or one of equal merit. The arms, which, as in the male, were separately carved and artificially attached to the trunk, are here wanting, and only the head and torso are preserved. In this statue the nose is straighter and the lips less prominent than in Nefer-t; the eyes are larger or more open than in the male wooden statue. The "alæ nasi," narrowish rather than broadish. The countenance combines sweetness of expression with a certain sadness or careworn character. She is represented with the usual large and complex wig of ringlets. (The photograph of this statue was shown.)

Both these wooden statues were originally coated with a thin stucco to receive the colours of the living model, which have faded or crumbled away.

I next exhibit a photograph of a half-size statue in grey granite of an individual seated, the forearms resting on the thighs, the right with the hand grasping the papyrus, the left with the palm prone and fingers outstretched. Of this statue it may be said that at no period did the head receive greater breadth of treatment: there is no conventionality, but perfect nature. The eyes well opened; the nose slightly turned up, with "broadish" alæ; the mouth large, but with lips not too thick; the cheeks full, and the general expression shrewd, but benevolent. With English costume and complexion, this Egyptian of the ancient empire would pass for a well-to-do sensible British citizen and rate-payer. He wears his wig, of a character recalling that of a puisne judge; the curls of which are, however, not confined to the side lappels and margin, but conventionally range in tiers over the whole surface. On the somewhat thick neck a broad necklace is indicated. The knees are modelled with great care and anatomical accuracy; we have again the thick type of leg and ancle. Notwithstanding the rarity and value of the material, which must have been brought from a distance of some hundreds of miles, the granite has been painted like the statues in limestone and wood, and Mariette remarks, "*Malgré les cinquante ou soixante siècles qui la séparent de nous, elle a conservé une fraîcheur de couleur vraiment étonnante.*"

The last sculptural evidence (which by means of photography I now submit) of the physical characters of the Egyptians of the



ancient empire is that of Phrah CEPHREN himself, the builder of the second pyramid of Ghizeh.

In 1852, Mariette, subsidised by the Duke de Luynes, proceeded to excavate round the great Sphinx at Ghizeh, and discovered the Temple, in relation to the great Cairn or Pyramid-tomb of Cephren, with indications of ceremonial worship of the Sphinx, under the name Hor-em-Khu (Armachis of the Greeks). The temple is chiefly constructed of enormous blocks of alabaster and granite. It is the sole (visible) example of the religious architecture of Egypt, of the period of the Pyramids; it is, at present, as I explored it, known only by part of the roof, and the massive walls exposed by the excavations sunk into some of its chambers.

In the middle of the grand chamber was a well, and in it had been cast, during some revolutionary tumult or invasion, perhaps by the Hyksos, the royal statues. They were seven in number, all of Cephren, two of them perfect. Of these I exhibit a photograph of the best, of the life-size (Plate xx, fig. 4). The mutilations are confined to the fore part of one leg and forearm. The head and features are perfect. The material is "diorite", the most intractable of the rarer minerals of Egypt, harder than granite or serpentine.

The king is seated in the hieratic attitude, which afterwards seldom varied. Nude to the waist; thence extends the kilt, of finely plicate tissue, which terminates in a point between the knees. On the head is the "cleft" or royal head-dress, backed by the hawk with outstretched wings. The throne is a cube, or seat, with a flat back, and the side-supports or arms are formed of standing lions. Between the fore and hind paws of the lion rise, in high relief, the graceful stems of the ancient papyrus. The king extends one hand, resting on the thigh; the other holds the usual roll. The royal legend, cartouche, and banner is engraved upon the plinth of the statue on each side of the feet. The legend, in hieroglyphics of antique simplicity, is repeated on the back part of the monument.

The extreme antiquity of these sculptures is now recognised by the best Egyptologists, and testifies, unequivocally, to the perfection of this Egyptian art at the epoch of the Pyramids. They have not the severe elegance of the later statues, are more robust or massive, manifest a bolder or more vigorous chisel, which has been nowise checked by the hardness of the material.

The head is plainly a portrait; the trunk, or torso, is soberly modelled, but in anatomical truth equal to any work by Michael Angelo. The arms and legs, above all, exemplify the capacity of the artist to discern and reproduce the truth in Nature. If

these statues of the third and fourth dynasties fail, in idealised beauty transcending the structural conditions of the human frame, such as is seen in the works of Phidias and Praxiteles, they indicate, nevertheless, the progressive rise in the most difficult of arts, through antecedent series of generations. If the attitude be simple, almost to stiffness, the small amount of injury sustained by the brutal overthrow, shows how well such attitude lent itself to lasting preservation of its subject. It is the same in all the statues recovered from this temple. They supply the philosophy of history with a new chapter, demonstrating that, at the period when Kephren or Shafra adorned his temple with sculptured images, although the artist had risen, as a portrait sculptor, to a stage which has not since been surpassed, Egypt already bore the mark of that slow sacerdotal blight, or chilling influence, which petrifies everything belonging to it—the formulas of art, as well as the formulas of creeds.

But this did not extend to the individual lineaments of the king; and such show the same high human type common to all the sculptural evidences, near a hundred in number, each with well marked individuality, which demonstrates the race-characters of the ancient Empire of Egypt. An air of calm, self-satisfied superiority pervades the physiognomy of Phrah Kephren: a broad, square brow surmounts the gently-arched brows, free from frown. The nose is straight, of due proportions; the nostrils and “thinnish” alæ delicately moulded; the lips are less prominent than in the earlier sculptural examples of the ancient race; the malar bones squarely but not too prominently developed; the mouth and apparently the chin are as in the advanced European races; but from the chin depends the conventionally trimmed beard of royalty.

In assigning the period of 6109 years, from the present date, to the second monarch of the fourth dynasty, I adopt the conclusions of the distinguished and devoted explorer of evidences, who has already added the most conclusive ones, in support and vindication of the chronology of Manetho.

The happy discovery, in the present century, of the art of deciphering and translating the hieroglyphic inscriptions, whereby the ancient Egyptians surpassed all peoples in their care to secure imperishable records of their annals, has afforded sure grounds for an expansion of our ideas of the antiquity of Man in his advanced social status, in harmony with the ever-accruing evidences of his ruder pre-historic conditions of existence.

Of such primeval race, in relation to the ancestry of the ancient Egyptians, there is a curious concordance between the

earliest and latest hypotheses, quoted at the commencement of the present contribution to the problem. Both ascribe the origin of its subjects to the lowest forms of humanity now known. At least, I find the "descendants of Ham" to be held by the adopters of the Archdeacon's view to have been Negroes, such as are now spread over Africa, and they came to Egypt from Asia.* In Professor Huxley's hypothesis, the "remote ancestors" may be inferred to be autochthons, and the "probable admixture" to be due to immigration of, perhaps, a higher race from another locality, or other localities.

In the present century, an accomplished ambassador from this country to the "Sublime Porte," after some just and striking remarks on the ruins and remains of Ancient Egypt, which he had visited and illustrated, writes:—

"The ancient inhabitants of Egypt, by whom such works were performed and from whom Greece received instruction, bore the same crisped and curled hair which now distinguishes the negro, whom they likewise resembled in feature and complexion." "How is it then," the author asks, "that the present race of negroes, dwelling in the same continent, are deemed by too many Europeans as little superior to the brutes, when we have such proofs of the ability and cultivation of their elder brethren?" Sir Robert also finds an answer to his question, by the hypothesis of admixture: "Unfortunately the present inhabitants of Egypt, a mixed breed descended from various ravagers of the country, in whom little or none of the original blood remains, have been vulgarly considered as the legitimate descendants of the Egyptians of old; and thus, from want of a proper discrimination, the Negro has been robbed of the fame so justly his due."†

With the physiognomy of the African negro we are familiar. That of the "Australioid type" is less known. I, therefore, avail myself of the permission of the brave explorer of New Guinea, Signor Luigi M. D'Albertis, to submit, in plate xx, copies of

* "It is not to be doubted that, from the earliest ages, the black complexion of some of the descendants of Noah was known. Ham, it would seem, was of a complexion darker than that of his brothers. The root of the name Ham, in Hebrew, by the Rev. Prof. Blyden, 8vo, 1869, conveys the idea of hot and swarthy."—"The Negro in Ancient History," p. 164. "The word *Ken*, the Egyptian name for Egypt, probably the same word as Ham, signifies *blackness*." "The descendants of Ham appear to have colonised Babylonia, Southern Arabia, Egypt, Ethiopia, and other portions of Africa."—Bishop Browne, Commentary on Genesis, "Speaker's Bible," vol. i, 1871, p. 86.

† AINSLIE (Sir Robert, K.C.B.), "Views in Egypt, with Historical Observations," p. 3, fol., 1801. The original drawings, in the possession of Sir Robert Ainslie, by Luigi Meyer. The above quotation expresses the ethnological faith of "gentlemen of education and culture" at that date, and probably that of those for whom the "commentary" above cited was penned in 1871.

photographs, which he took whilst in Australia, of a male native of the Swan-creek tribe on that continent.

The Anthropologist adopting, by faith, the Australioid dictum, as the Theologist the negro dogma, may exercise, comparing plate xviii with plate xix, the speculative faculty in trying to account for the obliteration, in the subjects of the first, of the simial characters of depressed bridge and broadened alæ of the nose exemplified in plate xix. How the beetled brow became reduced, and the depression it overhangs in the Australian (*ib.* fig. 1) became filled up, in the Egyptian (plate xviii) is another problem. The vertical line dropped from the nose-tip in the Australian touches the lower lip; the alveolar "prognathism" to which this is due has to be reduced, in the ascensive course, to Egyptian "orthognathism," which is as decided as in average Europeans in the subjects I have selected from the Fourth Dynasty in plate xx.

Materials for comparison of the hair in Australians and ancient Egyptians are scanty. The "wig" in the British Museum negatives the negro "crisped and curled" character, as it does the australioid "raven-blackness". It is glossy, of a brown or deep auburn colour. I should hardly call it "silky," as that term is applied to certain varieties of hair in our own race. The wavy or largely curled hair of the Australian is rather coarse or stiff than silky. But whence did the ancient Egyptians derive their habit of shaving or close-cropping the hair? If we are to seek for a remote ancestral source, we must go to the Andaman Isles instead of Australia for shaving bipeds. Neither race of savages practise circumcision. Common sense repudiates the notion of the necessity of inheritance in relation to such operations.

Head-shaving, like circumcision, was practised by the ancient Egyptians in order to remove or diminish inconveniences due to climate. The cause of climate being unknown, and the effects, or climatal influences, such as to suggest ideas of omnipotence in the Causer, the secondary effects upon the thinker might be held to be the mode of command to which he paid obedience by the practices of removing unessential troublesome parts of his body. There is no evidence or indication that the ancient Egyptians practised circumcision or shaving by direct, supernatural injunction, or that they adopted the practices from a more ancient race so miraculously favoured. There is evidence, good and acceptable, that the Egyptians did practise both circumcision and abstinence from pork, centuries before slave-labour was availed of by a Thotmes and a Rameses.

Chert chipped to an edge, or flint-flakes struck off by percussion, being the ordained material for excision of the prepuce, as for the abdominal cut in mummifying,

the finding of flint knives in Egypt requires collateral evidence of the reign or dynasty in which they were made and used, or proof of previous manufacture, before they can apply to the question of race anterior to historical life in that country. The use of flint and stone tools ranged there^{over} Thirty Dynasties—a period of from 3,000 to 4,000 years. The best collection of this Egyptian manufacture is at Turin; but the authorities of the museum refrain from rushing to conclusions on such ground as to the remote ancestry of the subjects of the present paper. Before quitting the comparison of the physical characters of such subjects with those of people alleged to represent the ancestral type, I would ask attention to the limbs of the ancient statues.

Slender legs, with feebly developed gastrocnemial muscles, characterise the Australian race. Mitchell exemplifies this feature in the subjects, afforded by natives of the Bogan tribes, of plate 21 of his instructive work.†

The headless statue of a functionary, from a tomb of the Fourth Dynasty, No. 35, in the British Museum, serves to show the contrast of crural development between the ancient Egyptian and the Australian. This contrast is repeated in all the statues of the Museum at Boulak. It is not exaggerated in the famous wooden figure (plate xx, fig. 1). The truthful modelling of every part of that chef-d'œuvre of primeval sculpture, guarantees the exactitude of the proportions of the, both relatively and absolutely, muscular legs. Mariette, without any reference to questions of race, especially notes it.*

One has only to glance at the Fellaheen working the "shadoof," or the primitive swing-bucket, along the banks of the Nile, to see the retention of this "nervous" type of limb, through well-developed and well-worked muscle and tendon, bequeathed to them by their remote ancestors.

With these remarks, suggested by a comparison of the physical characters, other than osseous, of the ancient Egyptians, and of bipeds of the australioid type, I proceed to note those of the skull in the same people, so far as they bear upon the questions of affinity or descent.

It may sound strange, the opinion or belief that Anthropology

* "Three Expeditions into the Interior of Eastern Australia," 8vo, 1838, vol. ii.

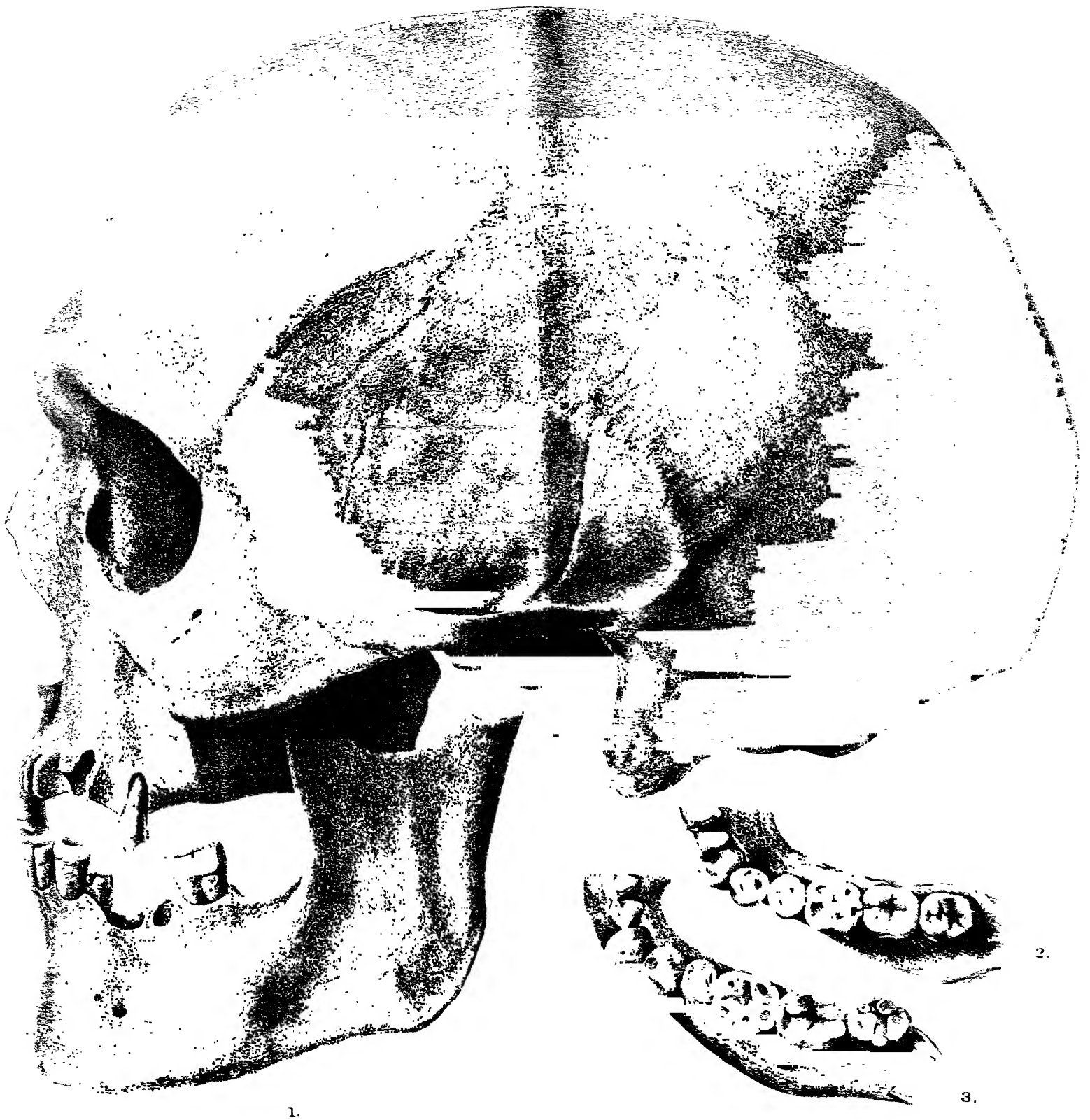
† "On reconnoit facilement dans le personnage à la figure ronde, aux pectoraux accusés, aux hanches développées, aux jambes nerveux, une statue de l'Ancien Empire. C'est Nefer, architecte de Memphis, que nous avons devant nous." "Descr. de Planche 25." "Album du Musée de Boulak, avec Un Texte Explicatif, par Mariette-Bey, fol. 1872." In the description of this statue, in the "Catalogue," p. 177, No. 458, he writes: "Si petite qu'elle soit, l'harmonie de ses formes lui donne l'aspect d'un colosse. La poitrine et les jambes sont traitées avec la supériorité qui caractérise cette époque."

has, hitherto, possessed no undoubted evidence of the osteological characters of an Egyptian of the period of the earlier dynasties of the ancient empire. Even the evidence I am about to adduce is open to the attack of a sceptic. I did not myself extract the skulls from previously un-meddled with tombs of the time of the Fourth and Fifth Dynasties. But my faith in the donor, Mariette-Bey, the most persevering and successful explorer of the oldest tombs of Sakkarah, encourages me to expect, from fellow-anthropologists, the same confidence in the age of the two skulls about to be described, respectively marked "IV Dynastie," and "V Dynastie," by the hands of their discoverer and donor. These skulls I intend to present, in his name, to the British Museum. The one from a middle-class individual, who died in the reign of a Pharaoh of the Fourth Dynasty, is the subject chosen for the profile-view, life-size, by the gifted artist, Ford, in plate xxi.

Perhaps the most extensive series of skulls of inhabitants of the land of Egypt is that preserved in the Museum of the Academy of Natural Sciences at Philadelphia. This series is entered in Meig's "Catalogue of Human Crania" in that Museum, under the head, "XI. Nilotic Race", which follows "X. Berber Race." The first sub-series is of "Ancient Theban Egyptians". The skulls are thirty-four in number, and are stated to have been derived from "the Theban Catacombs", "the Catacombs of El Gournah, near Thebes", etc. El Gournah, and other parts of the environs of Tabé, were seats of interments of mummified bodies of dwellers of the vast city during a period of three thousand years.

The oldest may be referable to the twelfth dynasty, but there is no evidence of the precise period or reign in which lived any of the individuals affording the skulls of Egyptians in the Museum of Philadelphia. Another series of Morton's cranial evidences are stated to be "from the ancient tombs of Ghizeh", but without any data of the age or period of such places of interment.

Ghizeh and Sakkara were huge graveyards, north and south of Memphis, receiving the mummified remains of the inhabitants of that city from the date of the Pyramids to that of the Ptolemaic dynasty. The sarcophagus No. 8, for example, in the Musée d'Antiquités at Boulak, is of a priest, named Ankh-Hapi, who lived, according to Mariette-Bey, "probablement sous l'un des premiers Ptolémées." ("Notice," etc., p. 63.) So, likewise, at Sakkara, the graveyard to the south of Memphis, skulls may be obtained from mummies and tombs belonging to periods ranging from 4000 to 300 years B.C. The mummies of two generals, named Ja'ho (in Greek, Taachos), who held commands in the



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Egyptian army under the earlier Ptolemys, were obtained, with their sarcophagi,* from the burial-well of the family tomb at Sakkara.

Not any of the tombs or sepulchres at Thebes are, demonstrably, of an antiquity higher than that of the eleventh dynasty, about 3000 B.C. Those which afforded all the mummies and skulls of determined date are subsequent to the expulsion of the Syro-Aramæans from Lower Egypt, and range from 1700 B.C. to the Ptolemaic period. No skull from Thebes, or its environment, El Gournah, Medinet Abou, Karnak, etc., could be depended upon, or throw any light upon the cranial characteristics of the founders of the Egyptian civilization. The oldest skulls are to be looked for at "Harabat-el-Madfounch"—the most probable locality of the ancient Thinis, the seat of government of the first and second dynasties (5000 B.C.)—to the ruins, near which village, of the Temple and Oracle of Butos,† the Greeks gave the name of Abydos, and where probably the remains or tomb of Osiris himself may be found.

Pruner Bey's "Observations", made on M. Prisse's collection, which, with the exceptions of two skulls from Memphis, were from Thebes, are inadequate to support a sure conclusion on cranial characters, as to the original race of the Egyptians, or of any, prior to the intercourse of the XIV—XVII Dynasties with the neighbouring Nubians after their expulsion by the Hyksos from "Lower Egypt".

Of the two skulls, certified by Mariette-Bey to be, one from a family-tomb of the Fourth Dynasty, the other from one of the Fifth Dynasty, I subjoin the following table of admeasurements (*see* next page):—

The figures of the natural size, by Ford, of the skull of the male of the fifth dynasty, will preclude the need of verbal description.

It is intermediate in character between the two skulls of which Pruner-Bey gives reduced views, as illustrating respectively his "type fin" and "type grossier."

Plate xxi may in some degree aid in following and appreciating the contrasts presented by the skulls of ancient Egyptians and Australians.

Upwards of 160 osteological specimens of aborigines of Australia and Tasmania in the Museum of the Royal College of Surgeons, Nos. 5,184-5,345 inclusive, are described in the catalogue of that part of the collections," 4to, pp. 805-830. With these I have compared the skulls of the same people in the British Museum. The cranial characteristics may be summed up as follows:—Cranium narrow, with contracted and retreating

* No. 12, *ib.*

† Herodotus, "Euterpe," sec. cxi.

"Admeasurements of skulls of ancient Egyptians, from tombs at Sakara, and of an Australioid."

	Fourth dynasty.		Fifth dynasty.		Australioid.	
	Female.		Male.		Male.	
	in.	lin.	in.	lin.	in.	lin.
Circumference, including super-orbital and super-occipital prominences ...	21	—	21	10	20	2
Length, from ditto to ditto ...	7	9	7	9	7	4
Breadth, at hinder part of squamous sutures ...	5	4	5	10	—	—
Ditto, at parietal bosses ...	5	3	5	9	4	10
Ditto, at zygomata, outer side ...	5	3	5	3	5	4
Ditto, of frontal bone at coronal suture ...	4	10	5	9	4	4
Length of frontal, from the nasal to the coronal suture ...	4	8	4	9	4	2
Ditto of parietal, from the coronal to the lambdoidal suture, $1\frac{1}{2}$ inch from sagittal suture ...	4	8	4	—	4	5
Ditto of sagittal suture ...	4	$7\frac{1}{2}$	5	3	4	2*
Ditto of occiput, from the hind end of sagittal suture to the hind border of the foramen magnum ...	3	11	4	—	3	6
Ditto from the nasal suture to lower part of the mandibular symphysis (chin) ...	4	9	5	—	4	3
Ditto from front border of foramen magnum to ditto ditto of maxilla ...	4	2	4	1	4	—
Extent of curve (calvarial arch) from the nasal suture to the middle of lambdoidal suture	10	1	11	3	9	8
Ditto of curve (mastoid arch) from the point of one mastoid process over the summit of the vertex to that of the other process	15	9	16	1	13	6
Vertical diameter from hind-border of foramen magnum to fore-end of sagittal suture ...	5	8	6	—	5	—
From fore part of meatus auditorius to ditto of mid-upper incisive alveolus ...	4	6	4	6	4	5
From hind of ditto to middle of super-occipital ridge ...	4	3	4	6	4	—
Mandible (vertical diameter of) at symphysis...	1	5	1	$4\frac{1}{2}$	1	4
Ditto " last molar (m. 3) ...	1	2	1	$\frac{1}{2}$	1	2
Ditto " coronoid process ...	2	8	3	—	2	6
Length from back of condyle to front of mid-incisors' socket ...	4	6	4	6	4	5
Ditto from ditto to mental prominence (chin)	5	2	4	10	4	6
Breadth, antero-posterior, of ascending ramus, at base of coronoid process ...	1	8	1	9	1	8
Ditto of the rami at the angles ...	4	—	4	—	3	11

* Separated from the lambdoidal suture by a "wormian bone." 8 m m in diameter.

forehead; thick and prominent superorbital ridge, continued across the glabella and overhanging the deep set, small and slightly prominent nasals. The sides of the calvarium slope away from the sagittal elevation; sutures less dentated than in higher races; the alisphenoid narrow, and the squamosal usually closely approximated to the frontals, if it does not directly articulate therewith; frontal sinuses seldom developed; malar bones small, but tumid or prominent, and often rugged. Cranial index 70 to 75, more commonly nearer the lower figure. A well-marked characteristic is the large proportional size of the molars, premolars, and canines, but more especially of the molars, and the almost constant distinction of the two external fangs of these teeth in both upper and lower jaws.

The obtuse thick conical form of the crown of the canine, with a long and strong fang, and the minor loss of size in *m* 3 as compared with *m* 2 and *m* 1, are pretty constant characteristics of the Australio-Tasmanian skulls.* (See Pl. xxi, fig. 3.)

Considerations of cost forbid the addition of a plate of a type-skull of an Australian to compare, or rather contrast, with that of the ancient Egyptian (Plate xxi, figs. 1 and 2.) But the following comparison may be tested or appreciated by reference to the figures of such typical Australian skull in my "Anatomy of Vertebrates," vol. ii, figs. 368, 369, 370, and 396, giving side, base, and front views, with a vertical section showing the proportionally thick cranial walls, in which, however, skulls of African negroes resemble those of Australians. This skull, No. 5,304, is of a male Australian of the "Western Port tribe," and "presents, irrespective of any artificial distortion, the lowest character of any human skull in the Museum."† The third series of admeasurements in the "Table," p. 13, exemplify the greater proportional capacity of the brain-case of the ancient Egyptians; it has expanded in height and breadth in a greater degree than in length; and the chief expanse is in the fore part of the frontals, giving a more vertical and less receding contour from the glabella to the vertex. In both crania the length exceeds the breadth, but to term the skulls on that account "dolicocephalic," and to use that term of art in order to predicate of community of race of the ancient Egyptians and Australians, is to make it a weapon in the service of error. The length of the

* The dental characters of this race were, I believe, first noted in my "Odontography," 4to, 1840-45, p. 454, plates 118, 119. They support the common evidence from cranial characters of the essential unity of the aboriginal races of Australia and Tasmania, or those found in those islands by their discoverers. In the skull of the Tasmanian child, No. 5,345, Mus. Coll. Chir. "The characteristic large size of the crown of the first true molar is well shown, etc."—Catal. p. 829.

† Catalogue, *ul supra*, p. 823.

Australian cranium equals that of some Scandinavian skulls of Retzius' "brachycephalic" type, but this latter term mainly signifies that the cerebral hemispheres were relatively broader than in the Australian; the difference of breadth is less in the Egyptian. The vertex in profile is less convex in the ancient Egyptian than in the Australian skulls. The calvarium is flatter; but this is due to the greater vertical development of the anterior and posterior cerebral lobes; uplifting corresponding parts of their bony covering. When the middle lobes, also, gain in vertical extent, as in the brains of a Shakespeare and Walter Scott, the contour regains the curve shown in the Australian. If a term of art were devised to signify such arched form, it might be predicated, like "dolichocephalic" of extremes of cranial development. The alisphenoid in the ancient Egyptians has the same extent of union with the parietal as in most European skulls. There is no approach to, or indication of, the Australian, *quasi* simial, peculiarity in the low development and changed connexions of the alisphenoid. As little does the ancient Egyptian skull show the glabellar protuberance, with the abrupt and deep indent at the root of the nose, associated with a like physiognomical feature in the Australian. The upper border of the orbit, in this low race, is thick and rounded, in the Egyptian it is neatly and sharply defined, as usual in the higher races. The Egyptian malar bone is quadrate without special protuberance on its outer surface, its vertical breadth is also greater than in the Australian.

Unknown and scarce conceivable as are the conditions which could bring about a conversion of the Australian into the ancient Egyptian type of skull, the influences of civilization and admixture would be still more impotent in blotting out the dental characteristics of the lower race. The size of crown and multiplication of fangs are reduced in the ancient Egyptian to the standard of Indo-European or so-called actual highly civilised races. The last molar has the same relative inferiority of size (Pl. xxi, fig. 2.) The crowns of the teeth are found much and evenly worn in many ancient Egyptian skulls, and the incisors seem to have more fore-and-aft breadth in such; but it is not greater than the incisors of Europeans would present in sections of the crown at a corresponding part. It is not, as has been supposed, an Egyptian peculiarity. The characters of the skulls of the individuals of the Fourth and Fifth Dynasties are repeated in many Egyptian ones of undetermined age, with minor modifications occasionally exceeding those exemplifying, in the reduced views given by Pruner-Bey, of his "type-fin" and "type-grossier."* In no

* "Recherches sur l'origine de l'Ancienne Race Egyptienne," in "Mémoires de la Société d'Anthropologie," 5vo, Paris, tome 1, p 399, plates xii. and xiii.

instance is the *norma occipitalis* "sharply pentagonal." The series of Australian skulls which I have studied in reference to the present comparison offer no corresponding variations from their type.*

Food, mode of obtaining it, bodily actions, muscular exertions, mental efforts stimulating and governing such acts, vary comparatively little in Australian tribes. The low social status, concomitant sameness, and contracted range of ideas, the comparatively limited variety in the whole series of living phenomena, from childhood to premature age, of human communities of the grade of native Australians and Tasmanians, have governed the conformity of their low cranial organization.

A nation governed administratively, with priestly and military castes, functionaries, hydrostatic engineers, land-surveyors, mummifiers, architects, artists, scribes, jewellers, weavers, and other handicraftsmen, agriculturists, fishers, fowlers, etc., may be expected to leave cranial evidences of the varieties in force and kind of their brain-actions and developments, such as skulls from cemeteries of similarly advanced people, invariably present.

Taking the sum of the correspondence notable in collections of skulls from Egyptian grave-yards as a probable indication of the hypothetical primitive race originating the civilised conditions of cranial departure from the skull-character of such race, that race was certainly not of the Australioid type, is more suggestive of a northern Nubian or Berber basis. But such suggestive characters may be due to intercourse or "admixture" at periods later than Thirteenth Dynasty; they are not present, or in much less degree, in the skulls, features, and physio-

* The "scaphocephalic" skull of an Egyptian mummy in the Museum of National History, Edinburgh, figured by Professor Andrew Fife in his "Illustrations of Human Anatomy," Edinb. 1814. as the characteristic form of skull of that ancient race, merely exemplifies the course of ossification of the neural spine of the second cranial vertebra from one median centre, resulting in a single bone, normal in relation to the Vertebrate Archetype, but exceptional in the human species. The date of the mummy is undeterminate. The radiate course of ossification of the connate or early confluent parietals is indicated in this skull. The anomaly is attended with absence of the bosses, indicating the two parial centres from which the parietal bones are normally ossified in man, with absence of the sagittal suture, and convergence of the supero-lateral cranial walls to a narrow ridge-like summit, arching from the occiput to the frontal region, the calvarium resembling an upturned boat sufficiently to have suggested the term now applied by craniologists to this long and narrow-headed variety which has been met with, from the time of Blumenbach—*Decas cranium*, 1799, tab. iii.—in most varieties of mankind, and, occasionally, with traces of the bosses and suture, indicative of later confluence of the parietals. Skulls of Insular Papuans have shown the subcarinate, elongate, narrow shape, with large parietal bosses; but, if conclusions of common origin or affinity were hazarded on this ground, such Australioids might with more reason be said to be of the same race with the Eskimaux and Greenlanders, than with the originators of the civilisation of Egypt.

gnomies of individuals of from the Third to the Twelfth Dynasties.

Failing to get physical evidence in support of the hypothetical "negro" or "Australioid" origin of the ancient Egyptians, it may be asked if there be any psychological clue to guide us through the dark labyrinth of their pre-historic past.

In the British Museum is a fresco painting of an ancient Egyptian fowler, who has glided in his light boat through the tall papyrus reeds and lotus stems to a swampy locality, the haunt of wild-fowl. There he kills by a stick, which he is in the act of throwing at the startled flock. The instrument calls to mind the "boomerang" in its use, but is unlike it in shape; it seems to be a heavy, longish, rounded tree-branch or club, slightly bent in opposite directions; it may have been less effective than the flatter weapon, bent at the angle which insured its curved and retrograde course through the flight of scared birds, as deftly flung by the Australian native. But, if the resemblance had been perfect and the old Egyptian convicted of the "boomerang"—is the hasty picking up a stick, accidentally so shaped, to fling at a flock of birds unexpectedly flushed, followed by observation of its unlooked-for course, suggesting repetition of the experiment, so profound and complex an operation as must needs be acquired by inheritance—by derivation from the race that, once upon a time, was blessed by an individual with a brain equal to availing himself of such accident! I have elsewhere remarked:—"We know not the size of brain in the Melanian inventor of the throwing-stick or of that of the deductive observer of the properties of the broken branch bent at the curve or angle of the boomerang. Such benefactors of their race were, perhaps, as superior to ordinary Australians in cerebral development as the analogous rare exceptions in intellectual power have been found to be among Europeans."* But I cannot use the fact of an ancient Egyptian throwing a stick to kill wild-fowl as a satisfactory or sufficient sign of his descent from a "remote ancestor" of Australioid type.

If one bowed to Samuel Johnson, fulminating: "Savages are the same everywhere, sir!" and to the dictum: "all civilised peoples were antecedently savages," the "Institute" need not trouble itself as to the locality where the primitive condition of humanity still prevails whence Egypt derived its first advance. Any member might arbitrarily make his choice.

There is a dark-skinned race with black wavy hair, skull longer than broad, having the mammalian character of "fleshy lips" and one, common to many bipeds, of broadish nasal alæ,

* "Anatomy of Vertebrates," 8vo, 1868, vol. iii, p. 145.

who, by the discoverers of their islands and the early settlers, were called "savages," and who now elect and return representatives of their own race to the Parliament of New Zealand. The Australioids have not yet advanced in New South Wales to that privilege. Admixture and contact with civilisation, instead of modifying, seems to be extirpating such alleged forefathers of the ancient Egyptians. When knowledge is predicated of the distinguishing characteristics of these "remote ancestors," and we ask on what that knowledge is founded, the authoritative reply, to the effect that "they were an Australioid race," and "we know" the characters of such race, is not satisfactory. What signs of thought, of mind, underlying advance, and comparable to any little step in the rise to civilisation can be discovered in Australioids may be more acceptable to those who are free to exercise judgment. After diligent quest, I find only the following worthy of submitting to the "Institute" in relation to the present subject.

The "Board" for "Protection of the Aborigines of Australia" has collected the most reliable evidence extant on any advance, or steps in civilisation, made by that race prior to colonisation or admixture. They were and are grouped in "tribes" or primary divisions, commonly related to a favorite locality; and certain tribes are again divided, such secondary groups of individuals being indicated by a visible symbol or "totem," commonly of some animal. The "Mount Gambier tribe," *e.g.*, is divided into the "Kumite" and the "Krokee" families. Every man is either the one or the other; and by one added syllable, "gor," for female, every woman of the tribe is either a "Kumitegor" or a "Krokeegor." Now, the step in advance which I note as such, is one that appears to rest upon observation by the natives of the evils of breeding "in and in." A Kumite must marry a Krokeegor; a Krokee must marry a Kumitegor. Marriage within the sub-tribe is prohibited.

In some tribes the two primary divisions are further divided, resulting in four classes, distinguished by class-names, on which the laws of marriage and descent are founded. There are also tribes in which such classes are again sub-divided, and these again are distinguished by "totems," such as "emu," "opossum," "blacksnake," etc., also mainly in relation to restriction of intersexual selection.

The able secretaries of the "Board of Protection," etc., to whom ethnology is indebted for the above facts, have drawn up and distributed "tables" and "questions" for facilitating the acquisition and record of "class-names," customs of marriage and descent," etc., and for determining the etymology of any

native word expressive of kinship, "totem," or class-name.* It is admitted that some migratory tribes use neither the one nor the other—seem not to have advanced to the "Mount Gambier" stage of progress.

But small as this contribution may be, it does bear on the relation of Egyptian civilisation to an alleged Australioid source. The inscription on the plinth of Nefer-t's statue, *e.g.*, calls her "sister" of Ah-hotep: just as Isis, the mother of Horus, was "sister" of his father Osiris. The marriage within this "incestuous" degree was characteristic of the Egyptians, at least of the higher and royal families, down to the dynasty of the Ptolemies, and contributed doubtless to their degeneration. In this respect the Australians have the superiority.

Passing to later periods of Egyptian History, ethnology is next concerned in obtaining evidences bearing upon the question of the race of the nomad invaders and conquerors of Lower Egypt, known as the Hyksos or Shepherd Kings. Their capital, or chief residence, was in a good strategical position in the Delta† commanding the entry into the fertile valley, by the isthmus, along which they themselves had penetrated to Egypt. This city, Tanis, Sān, Zoan of the Old Testament, now indicated by shapeless mounds, has yielded much valuable additional evidence of the condition of Lower Egypt during the 500 years in which it was governed by shepherd-kings. It seems that they adopted the architecture, the arts, the writing, and much else, of the more advanced race whom they had partially subdued or expelled. They enlarged and embellished, by means of native Egyptian artists, the "Great Temple", founded in the Sixth and finished in the Twelfth Dynasty." They added the "dromos", or avenue leading to the Pylon of this temple, after the characteristic Egyptian fashion, viz., by series of sphinxes, of colossal bulk. The photographs of two of these sphinxes which I now exhibit, show, as do many such of later dynasties, the likeness of the individual king of the period, in the human head of the sphinx, which here is of a Hyksos king, whose name or cartouche is carved upon the granite body of the lion, the head being grandly and artistically set off by the mane of the associated king of beasts.

No ethnologist cognizant of the similarly sculptured representations of the Assyrian monarchs, borne by the body of the bull, or of the lion, can fail to recognise the earlier answerable bust of the shepherd-king as being a modification, coarser or

* "Report," 1874.

† A map of the Delta, to the exploration of which the author devoted part of the time in his last (fourth) sojourn in Egypt, showing the sites of the ancient classical and biblical cities, was suspended in the meeting-room.

ruder, of the same race. The beetling brows, prominent cheek-bones, broad arched nose, thick-lipped, sensual mouth, more abundantly developed beard and whiskers, an expression of severity, sinking, in these older, earlier evidences of the Syro-Aramæan race, to a brutal strength of expression—all betray the origin of the nomad wanderers, wealthy only in flocks and herds, who, following in the wake of such of their predecessors as famine had driven, from time to time, to seek sustenance in the settled cultivated land of Egypt, after troubling the rightful monarchs of the thirteenth and fourteenth dynasties, at length succeeded in expelling the fifteenth dynasty from the Delta, and in settling themselves upon so much of the fertile Lower Egypt as included the ancient city of Memphis. Prior to this invasion, Egypt had tamed and bred the wild ass of the desert, but knew not the horse or the dromedary. The possession of these quadrupeds by the Asiatic nomads may have assisted in their conquest. Both horse and dromedary rapidly multiplied in the fertile land. The expelled kings of the old race, meanwhile, maintained themselves in Upper Egypt, and developed Tape or "Taba," their chosen capital, afterwards Hellenised by the Greeks into Thebes. They contracted alliances and intermarriages with the chiefs of Nubia; and, after continuous border warfare on land, and on the river, finally succeeded, under Amosis, first king of the eighteenth dynasty, in expelling the "vile brood of shepherds", as Manetho calls them.

A significantly instructive account of the victorious conclusion of the last campaign is recorded in the mausoleum of the chief commander under Amosis. We are indebted to Chabas for its translation. The last act of the campaign was the capture of Avaris, near the Pelusiac mouth of the Nile, whence the fugitive Hyksos were pursued to the confines of Palestine. But the centuries of their sovereignty had been attended by immigrations, and the settlers, who had multiplied on fertile tracts of the Delta, did not wholly quit their cultivations. They remained and submitted to the new, or rather the returned old, masters.

Exploring, on my first visit to Egypt, the sections of the desert exposed by the cuttings of the Suez Canal, then in progress towards completion, I was struck with the marked difference in complexion, features, and hirsute development, of certain more robust, stronger-framed navvies or labourers, as contrasted with the more numerous bands of the ordinary Fellaheen or Egyptian type. I was informed that the stronger race, some with reddish hair and fresh tint, were from the vicinity of the Lakes Menzaleh, and from villages extending to the fertile tract supposed to have been the "land of Goshen". The features of the

shepherd-king were, in the main, those of several of the evident descendants of that Syro-Aramæan race. The type is best preserved in the actual dwellers of the villages near the margins of the Menzaleh lakes; they are skilful fishermen.

Reverting to the course of history, the land of Egypt, restored through its length and northern breadth to its legitimate rulers, rose under the Phrahs of the renowned names of Thotmes, Amenophis, Rameses, to its climax of grandeur. But what concerns us, as anthropologists, is to observe in the sculptured likenesses of these conquerors unequivocal traces of the Ethiopian blood introduced, during the five hundred years of their exile from the lower provinces, with intermarriage with the families of warlike chiefs of tribes bordering the southern or Theban kingdom, and extending from Nubia to the Soudan. The photographs which I show are less necessary, since the British Museum possesses, through the enterprise of Belzoni, and noble acquisitions from other sources, the evidences of the Nubian lips, and elongate, almond-shaped, eye-apertures,* modifying the more European physiognomies of the people and kings of the older Empire. It might have been better for her had Egypt contented herself with her natural boundaries. But, in relation to history, the campaign of Sesak or Sheshonk, of the twenty-second dynasty, B.C. 980—among the spoils of which were the “golden shields” and other portable valuables of the Temple of Solomon—gives us the first or earliest certain correspondence or parallelism between the chronicles of the Hebrew and of the Egyptian priests. The sculptures at Karnak illustrate both the Manethonian record and the history of Rehoboam. Egypt, then, became overrun from the south. The Ethiopian connections pressed their claims, and in Sabacon we have a Pharaoh of Cushite or Nubian race. Meanwhile, the old tributary of Egypt, Assyria, had gained her independence, and, profiting by the teaching and arts of her conquerors, rose to importance. Nineveh falls to Babylon, and Assyria bows to Persia. Cambyses extends his conquests to Egypt, and, after a brief and troubled recovery, Persia prevails, until Darius, of the thirty-first dynasty, yields

* The fixed point of attachment of the winker-muscle (“orbicularis palpebrarum”) is to the inner side of the rim of the orbit, a little below its equator. Strong action of this muscle draws the line of the shut eye-lids obliquely downwards and inwards. The strong continuous solar glare, sand-shower winds (Kahmpseens), and siroccos, of Egypt, beget an unusual frequency and force of contraction of the orbicularis, which ultimately establishes that obliquity of the long almond-shaped, deeply-fringed, eye-opening, which makes the characteristic of the Egyptian eye, after their centuries of sojourn in the latitudes where those influences are strongest and most prevail; a peculiarity seized by the painters and sculptors of the middle empire, with perhaps a slight exaggeration of the rim of the outer canthus, and dip of the inner one.

Egypt, with the rest of his dominions, to Alexander the Great. I, finally, show you the sculptured evidences of the Macedonian or Greek dynasties in a noble statue of Ptolemy Philadelphus, and in a beautifully executed bas-relief of Cleopatra, discovered in the sanctuary of the Temple of Denderah, and doubtless a true likeness of that unhappy queen.

At present, Egypt has returned to the rule of the Mussulman descendants of Amrou and his followers, of the same essential race as the Hyksos of old. But the actual reigning dynasty claims Albanian descent.

And now, I may be asked,—Is there, then, no ground for a conclusion as to the part of the earth dwelt in by the progenitors of the civilized subjects of Menes occupying Egypt seven thousand years ago?

The hypothesis of the rise of Egyptian civilisation and of the improvement of their aboriginal "Australioid type," "probably by admixture," implies immigration from another locality; so far there is agreement between the arguments of Squire and of Huxley. The latter does not offer an opinion of the local source or sources of the hypothetical admixture. The Archdeacon's view, probably the most widely accepted by "men of culture," positively affirms the locality whence the Hamitics migrated to Egypt. Their route, by land, must have been across the Isthmus of Suez. There is evidence that Asiatic immigrants did take that route to Egypt, and, subduing the northern Autochthones—for the "Institute" may assume them to be such till evidence to the contrary has been adduced—established themselves in the Delta, and founded, eastward of the Bubastic branch of the Nile, their capital city of "Tanis" (Sân=Zoân); the site being strategically chosen, as against succeeding immigrants and invaders; and, to the ethnologist, affording ground for inference as to the local origin or starting-point of the founders of such city. Is there any analogous evidence pointing, in like manner, to the source of "the admixture," or other causal conditions of the race, whose physical and psychical characters have already been discussed?

The proved immigrants were of the Syro-Aramæan, or a more northern allied, type, indicated, perhaps, by "Ur of the Chaldees;"* more direct evidence points to their being migratory shepherd-sheiks, typified by Lot and Abram, with their fighting followers. These "shepherds" displaced from the Delta the Pharaohs of the fifteenth, perhaps of fourteenth dynasty, about 2,500 years after Menes. Here, then, is suggested a test, or condition, bearing perhaps more directly than the modicum of linguistic evidence thereto applicable on the question of the

* Genesis xi, 28.

foreign source, if any, of the civilisation exemplified in Egypt during the reigns of the kings of the first to the fourteenth dynasties. Where were the capitals of the ancient Pharaohs? Above all, in what part of the land of Egypt was the metropolis of its earliest administrative government? We may be permitted to surmise that it might not be far distant from the mother country of the mythical pre-historic race, referred to by Manetho, which produced the civilisers and advancers subsequently deified as Osiris, Horus, Phtah,* Thoth,† etc. The site of such capital should indicate, as in the case of the Tanis of the Hyksos, the nearest point of contact with the source of civilising "admixture." Do the proved remains of such capital lie in the Delta? No.‡ Neither are they in Nubia. They are about midway between the northern and southern extremities of the oldest empire, at the locality to which the Greeks gave the name of "Abydos." The present mounds, near the village Harabat-el-Madfouneh, in the Nome or province of Girgeh, indicate the site of ancient Thinis, the capital of the Pharaohs of the first and second dynasties. We may expect from the operations of clearance and disinterment, promoted by the Khedive, at Abydos, under the superintendence of his able director of the "Service of Conservation of the Antiquities of Egypt," more light, and that of the most acceptable and valuable kind, to be thrown upon the most ancient and therefore most interesting chapter in the Manethonian history of the kingdom of Egypt.

Subsequently, and, as it seems, in connection with hydrostatic operations regulating the bed of the Nile and recovering swamp-land at that time nearer to the Mediterranean than now, and prior to the present intrusion on that sea by the Delta, the capital is moved northward, to within ten miles of the present Cairo, but on the Libyan bank of the Nile. It becomes the far-famed city of Memphis, with its great grave-yards at Ghizeh and Sakkara and their everlasting pyramids. After three dynasties have reigned there, the sixth goes further south than the primitive capital and chooses the Isle of Elephantine. There I have explored its site. One might surmise, from the analogy of "lake dwellings," that troubles from encroachers or invaders

* Metallurgist; direct operator, under the Creative Will, in framing the universe.

† Inventor of Letters; scribe of the Gods, coadjutor with Phtah, as the co-ordinating "Wisdom" in the art of creation.

‡ In reference to the Delta, the learned author of the "Handy-Book of the British Museum," 8vo, 1870, writes:—"Hither, it is said, came the tribe of Mizraim, or Menes, son of Ham, shortly after the Noachian deluge. Travelling westward from Central Asia, they passed the isthmus that unites the continents, and found in the valley of the Nile a good and pleasant place to dwell in," p. 14. The "dictum" is that of Squire, and rests on the same basis.

had to do with this choice; and it is certain that from the sixth to the eleventh dynasty, a period of 436 years, monumental evidences of the prosperity or greatness of Egypt are wanting. But with the Pharaohs *Entef* and *Mentou-hotep*, of the eleventh dynasty, Egypt seems to rouse herself from her state of torpor. Her rulers again move northward, and found the capital in the modern province of Keneh, which became developed into the mighty Thebes. The Osortasens and Amenhemhas of the twelfth dynasty extend their rule from the Mediterranean to the Soudan. The grand irrigation works in the Fayoum, the "Labyrinth" there, or House of Delegates, the Obelisk of On (Heliopolis), the fortresses of Kumneh and Semneh, in the far south, bespeak the culminating point in the glory and prosperity of the middle empire, soon to wane and set under the dark clouds of Hyksos invaders.

The large, patent, indisputable facts of the successive sites of capitals of kings of the ancient race, from the first to the fourteenth dynasties, do not support any hypothesis of immigration: they are adverse to the Asiatic one by the Isthmus. They indicate rather, that Egypt herself, through her exceptionally favourable conditions for an easy and abundant sustenance of her inhabitants, had been the locality of the rise and progress of the earliest civilisation known in the world. At least, in reference to a possible antecedent immigration, they leave the equal searcher after truth in an expectant attitude, and beget in him a determination to persevere in the researches indispensable for the fulfilment of his quest.

If the facial or physiognomical, as well as the cranial characters, were even less distinct than they are from the Hindoo race, in which, in India, a somewhat parallel course of civilisation and rise of mind to that in Egypt are exemplified, I am not aware of grounds which would justify a decision between concomitancy and causal connection in reference to such analogy. Ethnologists who are guided by linguistic evidence admit that the instances of such as might be attributed to a hypothetical extinct mother tongue are so much fewer in the ancient or hieroglyphical language of Egypt, than may be traceable in the Sanscrit language, as to indicate, on the hypothesis of migration, that the primitive colonists of the Nile valley branched off from the supposed Aryan or Asiatic cradle at a much earlier period than the southern offshoot; which, quitting the same source, climbed the Himalayas and descended upon the plains of Hindostan. But with such guesses my habits of thought and mental work have no congeniality. Adequate grounds for conclusions on such points seem to me to be still wanting.

But if the Asiatic source were neither Semitic nor Hamitic, may it not have been Japhetic?

The infantile repetition of one-syllabled sounds or word-signs to compel attention to wants or meanings, may characterise the incipient speech of primitive predatory families in whatever tract of land such bipeds may begin, or have risen to, their communal life: and their language, as it grows, will be characterised by such "agglutinated" syllables. But even if these should show a harmony of vowels, it will not afford ground for concluding *against* self-origination, and *for* inheritance from some earlier race, of such harmonious agglutination; or for assuming that a people so characterised linguistically in Australia or Nevada, *e. g.*, have sprung from ancestors who migrated from an Asiatic or any other common centre of dry land.

Whatever degree of "naturalness" may be ascribed to a "Turanian" group of mankind, such as may be predicated of Chinese and Japanese, must rest upon conformity of physical characters, and on such ground is inapplicable to Australians or Australioids. The idea that "the Turanian occupation of Australia took place at a time when that great country still formed part of Asia" is not supported by the geological and zoological grounds on which the relative ages and boundaries of past and present tracts of dry land are inferred.

One other consideration, in reference to the origin of the Ancient Egyptians, I would submit to the Institute. It is derived from the geographical distribution of animals.

The appearance, for example, of Asiatic brute species in an African locality and community, simultaneously with an immigration of an Asiatic human race—the fact of such latter immigration resting on other evidence—seems to tell against a prior colonisation from Asia.

The camel and the horse are Asiatic; at least no indigenous species of either has been observed in any part of Africa. Now, no quadruped of Asiatic origin, such as the camel, dromedary, horse, nor any bird of such origin, as, *e. g.*, the common fowl (*Gallus domesticus*, var. *Bankiva*), is represented in the hieroglyphics, nor do we see them on any monument or mural record, of a date antecedent to the Hyksos period. Whereas the delineated and sculptured records of the daily, especially agricultural, life of the ante-Hyksos Egyptians are executed with such simplicity and fidelity, and the animals relating thereto are so exhaustively, as it seems, so frequently and so truly delineated, that they afford materials for drawing up a zoology of that period of the empire, and give grounds for an inference that the people of the period had never availed themselves, like the later Asiatic nomads, of an extra-Egyptian source of wealth and power from the animal kingdom. They never had the opportunity of supplementing their native asses

by better beasts of draught and burden, nor of adding to the ducks and geese of their farm-yards the common fowl, until this species, with the horse and dromedary, had been brought into Egypt by the first or earliest known invaders of their kingdom.

That the Egyptians of the ancient empire were the most advanced of mankind at their period of the world's history there is evidence which justifies its general recognition by ethnology. They had no tradition of having come from Asia or elsewhere; they had traditions of a long antecedent period of intellectual incubation in Egypt, during which the exceptionally gifted ones, akin to Copernicus or Harvey, stood out as divine entities. Menes and his successors were owned to be merely mortal kings. The ancient Egyptians knew not when their world came to be, and, being essentially a truthful people, their priestly chroniclers did not say. The Manethonian record assigns the ordinary duration of life to its mortal monarchs; admits no multacentenarians, and so lends not itself to the scathing exposure of the physiologist. No destructive cataclysm of waters had ever scoured out their valley, destroying their progenitors together with the fertile alluvium in which they flourished: they recognised only their beneficent annual floods. Consequently they had no starting-point for dates, no "anno mundi." We now laboriously sum up their years of civilised existence by the records of the periods of successive individual reigns during thirty-one dynasties, and by the data confirming, supplementing, or amending, such recorded reckonings.

In the cursory survey of the physical characters of men, engaged in the earliest and most interesting chapter of human history, which the allotted time has permitted me to lay before you, I have incidentally touched upon the earliest evidences of the currents and directions of thought guiding and elevating a race, happily existing under exceptionally favourable conditions for the development of mind.

A land enriched with fresh fertile soil annually overspread by the bountiful hand of nature, yielding abundantly most wholesome and nutritious food with least labour;—this pursued beneath an ever bright and cloudless sky, with a climate exempting the tillers from any great care or pressing call for clothing or shelter;—such conditions of existence would seem to have been ordained for the initiation of the steps to that power and position destined for the human species in the scheme of creation. For, here, in this happy valley of the Nile, was given to man the leisure to meditate on other and higher matters than the provision for daily wants. Under these exceptional circumstances rose a community of families, a governed commonwealth, issuing in or rising to a monarchy.

Here the human conscience came to rest on a recognition of its Divine Author; was satisfied, or eased itself, by worship of the Fountain of Light and Disposer of Events, and was guided and consoled by religious observances, rituals and ceremonies, regulated and imposed by a hierarchy of priests; through whom, as in later races, the primitive religion and worship became corrupted and debased; objects of worship being offered to the common people, adapted, like the blood of St. Januarius to the lazaroni of Naples, to their emotional wants and limited faculties of abstraction.

The land was defended and the laws enforced by a military class led by the king, armed, drilled and trained according to the requisites of the then known art of war. Beneath these influences rose a progressive and mighty growth of all the arts of peace. Agriculture advanced to the needful stage; animals of use were subdued and domesticated; implements for tillage were invented; operations on a grand scale were carried out for irrigation. It may seem that for the ultimate delivery of the fertilising streams the engines were of the rudest kind, but the "shadoof" invented by the Egyptians and depicted on their monuments six thousand years ago, is the one still in use throughout the land.

The means by which enormous blocks of granite, of porphyry, of alabaster, were extracted from the quarry, transported hundreds of miles, wrought with a precision and finish equalling that of the finest masonry or machine-polishing of the present day, converted into and erected as lofty obelisks, or raised in mighty trabeate masses to the summits of noble and colossal columns,—these engineering operations of the old Egyptians may have been rude and cumbrous compared with those that steam-power deftly applied puts into the hands of the modern builder, but they were effective, and will ever command the wondering gaze and painful speculations of such professional minds as those of an ARMSTRONG, a FOWLER, or a BARRY!

Nor were the subjects of a Cheops, an Amosis, a Thotmes, less skilled in the smaller and more delicate handicrafts. Our Egyptian department in the British Museum will show you the beauty, variety, and fineness of the tissues they wove and dyed.

Those who visited the last "Universal Exhibition" held in unhappy Paris, and who made their way to the "Egypt" there represented, must have been arrested by the rich display of the rare, varied, and finely wrought jewels of the Queen-mother of the conqueror and expeller of the "ignoble brood of shepherds." To admiring, and perhaps coveting eyes—coveted, it is said these gems were, by one empress—it must have been plain that the arts of the jeweller and goldsmith have not advanced during the 3,574 years since Queen Aah-Hotep lived.

If sculpture be judged by simplicity, truth, and breadth of treatment; if design be tested by the never-failing knowledge of its subject afforded by mere outline, Egypt has not been surpassed by any of the nations that drew their elements and rules of art from her school. Her architecture, commanding astonishment, engendering admiration, remains unrivalled even in its present ruins.

In science, the Egyptians of the oldest empire had made advances in astronomy, hydraulics, geodesy, sufficing their requirements. After a few experimental failures they defined the year as it is now. Warned by the change of seasons at which their annual festivals came to be celebrated, while their year consisted of twelve months of thirty days, they noted the heliacal rising of the star Sirius, and learnt, thereby, to add five days to their last month; again, taught the shortcoming of this estimate by the accumulation of the required six hours less twenty minutes during the long lapse of years in which they kept their records, fasts, and feasts, they added another day to each fourth year, not without protests of the more orthodox or bigoted priests. Julius Cæsar, after the taking of Alexandria, learnt from Egyptian astronomy the correct period of the earth's orbit; and, on his return to Rome, and election to the chief pontificate, he promulgated the calendar which bears his name, which has been universally adopted, and will prevail in the main to the end of time.* Their three four-months' seasons of "flood-time," "seed-time," and "harvest-time,"† accorded with the favoured nature of their country.

Whether their configurations of the lands they conquered—for, like the Prussians, they carried with them itinerary plans of the countries they invaded,—whether the determinations of the areas and boundaries of their own precious portions of fertile soil, were as precise as those of modern geographers and of practised land-surveyors, I presume not to pronounce; but numerous papyri testify to the definition, by analogous geometric guidance, of the bounds of private property, so apt to be washed out by the annual overflow.

Howsoever that may be, Egypt was the cradle of science and

* "Il publia à cette époque un traité de droit augural fort étendu, et un autre d'astronomie, destiné à faire connaître en Italie les découvertes de l'école d'Alexandre."—L. Napoleon, "*Hist. de Jules Cæsar*," tome i, p. 317. The Egyptian astronomer Sosigenes accompanied Cæsar to Rome, and the Kalendar digested according to the Roman Kalends, Nones and Ides, with the order of the Roman festivals, was based upon the Egyptian estimate of 365 days and 6 hours, since rectified to 5 hours and 40 minutes.

† The "seed-season," "fruit-season," and "flood-season" of the old Egyptians, probably suggested the "germinals," "floreal," "pluvials," etc., of Rome, and the "sans-culottides" of the French Republican Kalendar of 1791-2.

of art, as of administrative government and of religion. She, by uniform testimony of history and philosophy, was the inventress of letters, of the symbols of thought whereby her learning could be recorded and handed down as it has been—now that we have learnt her alphabet—for the instruction of all time. To Egypt, while her sages lived, resorted the Greeks for their various knowledges, and hence they drew the sources of their mythology and philosophy as well as the canons of their sculpture and architecture.

From Orpheus, Hesiod, Pythagoras, onwards to Eudoxus and Plato—every name immortalised by its share in the development of the Grecian intellect—is recorded to have visited and sojourned in Egypt, to allay the thirst for knowledge by drinking from the fountains of her wisdom.

As I stood gazing on the solitary obelisk* that still stands to attest the old grandeur of Heliopolis—the Oxford of Egypt—of which ruined city the extent is indicated by surrounding mounds, not the least pleasing of the many associations† with the ON of Scripture was that which led me to speculate on the scene of Joseph's marriage, of the school of the youthful Moses, and on the whereabouts of Plato's lodgings, which, in the time of Strabo, could be pointed out to the old geographer! There Plato studied, it would seem, some years—as long, perhaps, as lasted the profits of the paternal olive-harvest with which, says story, he was endowed for the Egyptian journey, in order to meet the expenses of a student's residence.

From the priests of ON the Grecian sage received the doctrine of the immortality of the soul, which he afterwards developed in the garden of the Academy at Athens, with profit and delight to his listeners, 3200 years ago, as to the readers of the estimable Oxford Professor Jowett's translation, which brightens the intellectual history of the present time. The great Hebrew teacher, Plato's predecessor, who drew his learning also from the same Egyptian source, if the historical character of the narrative be assumed, could not admit the after-life, or teach of reward or retribution in a future state, without risk of tainting his monotheism with some trace of the manifold symbolism environing the worship of "the divine Son of Amen"—of Osiris, who, after suffering loss of the mortal life, which he had assumed for the bettering his kind, became, on resuming his divinity, their Judge.

All other histories are comparatively recent after that of Egypt. The Jewish branches off at a late period of the tempo-

* Noble monument of the middle empire, 12th dynasty.

† Near to it is shown an ancient sycamore, beneath which they tell that Joseph and Mary rested with the Holy Child, during the flight into Egypt.

rary and partial conquest of Egypt by the Syro-Arabian or Aramæan race.*

Chaldea or Assyria grew in wisdom and stature under the stern discipline and example of the conquerors of the eighteenth and nineteenth dynasties—the glorious periods of the Thotmes and Rameses—the type of the classical Sesostris and Memnon.

At a subsequent period, the roving Argonauts showed Greece the way to the sea-cities and harbours of the many mouths of the Nile. At a still later period the neoplatonisms, the subtleties, and dialectic creeds of the early fathers of the Church, grew rankly out of the rich hot-bed of the well-endowed schools, libraries, and churches of Alexandria.

And so the several streams of knowledge and belief, converging from these several derivatives, have spread westward and northward, ever deepening and widening, to culminate in such conditions of social humanity as now characterise Europe and her mighty offshoots.

There would thus seem to be one physical condition of the earth, especially aiding the first rise of (flint-weaponed?) man in civilization. That condition—in a maximized state of perfection—was, and is still, peculiar to Egypt. For five hundred miles and more, a mighty river flows along the valley it has made, without a tributary, and under conditions of sources and previous course, endowing it with the marvellous faculty of the annual overflow, leaving the fertilising residuum. There is nothing like it in the rest of the world! The geological features of the country are most simple and intelligible. From this point of view, Egypt is the last formed and newest of dry lands. From the historical stand-point it fed the first and oldest of civilised mankind. The teleological relations between the geologically recent and the socially ancient are clear enough; but the antithesis is not the less strange and striking.†

DESCRIPTION OF THE PLATES.

PLATE XVIII.

Fig. 1. Profile view of the head of a life-size statue of Ra-Hotep, a prince of the third dynasty of the ancient Egyptians.

Fig. 2. Ditto, of Nefer-t, his wife or sister. (From photographs.)

* If the miraculous incidents of the narrative did not exclude it from use in the quest of scientific truth, the incidental notice of "camels," among the gifts to Abraham by the Pharaoh whom he deceived, significantly indicates date and other conditions of the incident (Genesis xii, 16), and consequently the earliest period of Egyptian history to which it can be referred, viz., after the introduction into Egypt of that Asiatic ruminant by the nomad invaders.

† "Sous l'action de quelles circonstances se développa cette civilisation qui devait fournir une si étonnante carrière?" asks Mariette, "Apperçu," etc., p. 15. I suggest the above as helping to a reply.

PLATE XIX.

Fig. 1. Profile view of the head of a native of Australia.

Fig. 2. Front view of ditto, ditto. (From photographs taken from life by Signor D'Albarts, in Australia.)

PLATE XX.

Fig. 1. Statue, in wood, one-third life-size, of a functionary of the fourth dynasty of the ancient Egyptians.

Fig. 2. Oblique front view of the head and bust of the same statue.

Fig. 3. Profile view of ditto, ditto.

Fig. 4. Front view of the statue, in diorite, of Phra Cephren, builder of the second pyramid. (From photographs.)

PLATE XXI.

Fig. 1. Side view, natural size, of the skull of a male ancient Egyptian of the fifth dynasty.

Fig. 2. Mandibular teeth of ditto.

Fig. 3. *Ib.* of an Australian.

DISCUSSION.

Mr. HYDE CLARKE observed that, in considering the question of the Egyptians being autochthonous, we must not lose sight of his own definition of their relations with the Ude, of the Caucasus (*Journal*, vol. iii, No. 2, 1873), and those of Professor Leo Reinisch of Vienna, as to the relations with the Tibbu. The adoption of the names of Thebes, Abydos, etc., by the Greeks, had no reference to the commencement of Greek intercourse, nor were these Greek terms, but Sumerian, through which channel the Greeks obtained the knowledge of Egypt as of other culture. The form Thebes (= daba, town), is found over the whole area, and notably in India and Peru, and also in Brazil. The portraits of the prince and princess of the third dynasty appeared to show difference of race, or intermixture of race, for the princess showed the characteristics of a higher race.

Mr. Browning, Mr. Charlesworth, Mr. Park Harrison, and the President also spoke on the paper, and the author briefly replied.

Dr. EUGENE SCHUYLER read a communication on the Batchas of Central Asia, and the meeting separated.

JUNE 23rd, 1874.

Professor BUSK, F.R.S., President, *in the Chair.*

The Minutes of the previous meeting were read and confirmed.

R. G. HALIBURTON, Esq., 1, Whitehall Gardens, was elected a member.

The following List of Presents was read, and the thanks of the meeting were voted for the same.

FOR THE LIBRARY.

- From the AUTHOR.—On some Fallacies about the Incas of Peru. By Dr. T. J. Hutchinson.
 From the EDITOR.—*Revue Scientifique*. No. 50, 1874.
 From Dr. ROBERT PEEL.—The Dieyeri Tribe of Australian Aborigines. By Samuel Cason, Police Trooper.
 From the SOCIETY.—*Journal of the Royal Asiatic Society of Great Britain and Ireland*.
 From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—*Zeitschrift für Ethnologie*. No. 6, 1873; No. 2, 1874.
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The following paper was read by the author :

SOME REMARKS ON ETHNIC PSYCHOLOGY. By ROBERT DUNN, F.R.C.S.

THE comparative psychology of the typical races of man presents a subject for investigation of great interest to every ethnological inquirer, and to all physiological anthropologists; for who is there amongst them, let me ask, that does not yield a ready and willing assent to the dictum of the pagan philosopher, Favorinus, that whilst

“ On earth there is nothing great but man,
 In man there is nothing great but mind.”

It is not, however, my intention, had I the ability and the requisite information, which I have not, to enter fully upon a field of inquiry so wide, varied, and comprehensive, but to confine the remarks which I am about to submit to you principally to the physiological bearings of the subject—to cerebral physiology. Comparative psychology, indeed, in its widest sense, embraces the study and strict interpretation of all those living experiments, to use the happy expression of Cuvier, which nature has presented to us, in an ascending series, throughout the wide domain of animal life, from the lowest up to man himself; whilst ethnic psychology restricts us, in our inquiry, to the study of genus *homo sapiens*, and its typical varieties.

Now, waiving at this time, as foreign to our present inquiry, all discussion on the Spenserian doctrine of evolution, and on the Darwinian hypothesis of the genesis of man, however enticing and interesting such discussions may be in themselves, I would here at the outset remark, and as bearing directly on our present subject, that at the Cambridge meeting of the British

Association in 1862, more than eleven years ago, I read a paper on the psychological differences that exist among the typical races of men, and which I subsequently read before the Ethnological Society of London, and is published in Vol. iii of the Society's Transactions.

In that paper I dwelt upon the importance of assiduously studying and carefully contrasting and comparing the cerebral organisations of the typical races, with the view, and as the most efficient means, to the better understanding and elucidation of the psychological differences which exist among and characterise them. Believing, as I then did, and as I still do, that the distinctive psychical differences which exist among the typical races will be found to be engraven on their brains, I would again, and on the present occasion, enforce the paramount importance of this duty upon every physiological anthropologist, and thus indicate a field of investigation and inquiry, which, if fully explored, cannot fail, unless I am greatly mistaken, of yielding a rich harvest and of throwing a flood of light upon the subject of ethnic psychology.

And here let me ask, what time could then be more befitting and appropriate than the present for bringing this subject before the Anthropological Institute, while we have for our President such a distinguished physiologist as Professor Busk? I am fully aware of the difficulties which beset such an investigation and inquiry, but which nevertheless have been rendered no longer insuperable, as they were in the days of the venerable Blumenbach, by the indefatigable labours of Gratiolet, and the chart which he may be said to have provided for our guidance as a standard for comparison. For, to use the emphatic language of Professor Rolleston, of Oxford, "what Max Müller has done for language and Adams for astronomy, that Gratiolet has done for the anatomy of the human brain." Still, I cannot too strongly impress upon the minds of other physiological anthropologists my own conviction of the necessity and importance of a more exact knowledge than that to which we have yet attained of the cerebral structural differences which exist among the typical races of man. For how often, on the one hand, has there been noticed a marked superiority on the part of the savage over civilised man in the force of his *instincts* and in the acuteness of the organs of sense; but then, on the other hand, how great and striking are the differences in their intellectual manifestations—so striking and so great, indeed, in the intellectual inferiority of the Bushman, the Australian Savage, and the African Negro, to that of the Indo-European, that even their claims to our common humanity have been denied to them, and they have been considered and treated like wild fowl and cattle.

How important, then, becomes the inquiry—nay, incumbent the duty upon every physiological anthropologist to study, examine, and compare the nervous apparatus and organic instrumentality through which such varying psychical phenomena are manifested. Now, my own conviction of the paramount importance of this duty rests, as its bases, on the postulates, that the genus *homo* is *one*, and that the brain is the instrument of the mind.

For who, on the one hand, can ignore or deny the fact that all the races of the great family of man are endowed with the same instinctive intuitions, sensational, perceptive, emotional, and intellectual—the same mental activities, however they may differ in degree;—in other words, that they all have as constituent elements the germs or original principles *in common* of a moral, religious, and intellectual nature, so that, however great and striking the psychological differences may be which exist among and characterise them, they are nevertheless differences in degree and not of kind. And again, on the other hand, are not all physiological psychologists agreed that the brain or encephalon is the material organ of the mind—the seat of the understanding and the will? And that if there is one point into the physiology of the brain more firmly established than another, it is this, that the vesicular substance, or grey matter, of the cerebrum or great hemispherical ganglia is the *sole and exclusive seat* of all intellectual action and volitional power, and upon which, as its substratum, the mind is dependent for the manifestation of all its activities in this life, and among all the races of mankind. It is here that sensations are converted into perceptions, giving rise to ideas and becoming the pabulum of thought, and from here it is that the mandates of the will issue.

The human mind, rising above sensation and above perception, soars into the region of representative knowledge, grasping, through its intellectual faculties, its reasoning and reflecting powers, abstract ideas, and necessary and universal truths, and finding articulate expression for them, through the noble faculty of speech, in language. But at the same time, be it here remembered that, in affirming sensation, emotion, thought, and volition to be attributes or functions of the nervous system, all that is really maintained is this, that the vesicular matter of the encephalic ganglia furnishes the material conditions, the substratum or medium, through the instrumentality of which these mental phenomena are made manifest in this life. But as for consciousness itself, that is an *ultimate fact*, beyond which we cannot penetrate. For the abstract nature or essence of mind, like that of life, is to us *inscrutable*. They are indeed problems which belong to the same category. For here we know nothing

of life apart from an organism, and we have no manifestations of mind independently of a living *brain*.

Now the great hemispherical, as the crowning ganglia of the encephalon, are superimposed on the sensory, emotional, and motor ganglia for offices and purposes the noblest and most exalted of which the human mind is capable. For, as I have said, all physiological psychologists are agreed that they are the *sole and exclusive seat of all intellectual action and volitional power*. My mind, however, rests in the conviction, as a well-established fact, that different parts and portions of that vast sheet of vesicular matter which crowns the convoluted surface of the great hemispherical ganglia subserve and are the seat of special psychological activities and of different kinds of mental action.

For, as Mr. Herbert Spencer has well remarked: "Localisation of function is the law of all organisation whatever, separateness of duty is universally accompanied by separateness of structure, and it would be marvellous were an exception to this to exist in the cerebral hemispheres."

The microscopic investigation of the ultimate structure of the vesicular substance, in the three main divisions—the anterior, middle, and posterior lobes of the brain, by my friends Dr. L. Beale and Dr. Lockhart Clarke, revealing as it does to us in these three lobes distinguishing differences and varying degrees of complexity, assuredly warrants the legitimate inference of diversity of office.

And as complexity of function is necessarily connected with complexity of structure, and as it is in the ultimate structure of the vesicular matter of the anterior lobes that the greatest complexity in the machinery of its action, of nerve cells, nerve fibres, and circuits are demonstrable, does it not necessarily follow, as a legitimate deduction, that the vesicular matter of the anterior lobes is the seat of the highest and most complex of our psychological activities? But again, says Herbert Spencer: "Let it be granted that the cerebral hemispheres are the seat of the higher psychological activities, let it be granted that among these higher psychological activities there are distinctions of a kind, which, though not definite, are yet practically recognisable; and it cannot be denied, without going in direct opposition to established physiological principles, that these more or less different kinds of psychological activity must be carried on in more or less distinct parts of the cerebral hemispheres. To question this is not only to ignore the truths of physiology as a whole, but especially those of the physiology of the nervous system. Now there is either some arrangement, some organisation, in the cerebrum, or there is none. If there is no organisation, the cerebrum is a chaotic mass of fibres, incapable of performing any

orderly action. If there be some organisation, it must consist in that same physiological division of labour in which all organisation consists, and there can be no division of labour, physiological or other, of which we have any example or can form any conception, but what involves the concentration of special kinds of activity in special places."

And thus, again, we are led to the legitimate deduction that the vesicular matter of the anterior lobes, in consequence of the great complexity in the machinery of its ultimate structure, must be the medium or substratum of our highest intellectual activities.

Now, Dr. Ecker maintains—I quote his own words—"That the cortex of the cerebrum is the undoubted material substratum of our mental operations, and is *not* a single organ which is brought into play as a whole in the exercise of each and every psychical function, but consists rather of a multitude of mental organs, each of which is subservient to certain intellectual processes." And again he says: "Admitting it to be an undoubted fact (of which Dr. Ecker has no doubt) that certain portions of the cortex of the cerebrum subserve certain intellectual processes, the possibility is at once conceded that we shall some day arrive at a complete organography of the surface of the brain—a science of the localisation of the psychical functions. But a knowledge of the psychical organs of the brain, in all their relations, is certainly one of the most important problems for the anatomy and physiology of the next century, and the solution of which is destined to bring about a no small revolution in psychology." Gall, he says, had originally struck upon the right path—that of a careful study of the brain—but he quitted it very early, and making the fact, which in general holds perfectly good, that the outline of the skull adapts itself to the form of the contained brain, his starting point, Gall rested upon the belief that for laborious and rare investigations into the brains of the dead could be substituted observations on the scalps of the living. And hence the origin of his system of phrenology.

Since the enunciation of Gall, that the convolutions of the brain are the seat of the faculties of the mind, their development and classification have become invested with peculiar interest. All honour is due to Gall, for he was the first to classify the convolutions. One of the most remarkable men of the age in which he lived, he was alike distinguished for originality and independence of thought, for untiring industry and indomitable perseverance. No one has studied the varying outward forms of the human cranium, with a view to their psychical significance, with greater care and attention, and on a more extended scale, than the illustrious Gall. It was the labour of his life, and, so

far as outward and visible signs are concerned, he, Spurzheim, Combe, and Carus, from multiplied observations, have established certain cranial landmarks which are highly important in the study of the typical races.*

Now, the type of the human brain is the same in different races. For, on a cursory survey, how strongly are we at first impressed with the general resemblance which they bear to one another. We see the same lobes, the same convolutions, and the three main divisions of the brain into anterior, middle, and posterior lobes are as distinctly and as well defined in the one as in the other. But, on a closer survey and more scrutinising examination, we find marked and palpable differences among them, not only in the size and development of these three cerebral lobes, but also differences in the size, character, and complexity of structure in many of the corresponding convolutions, the significance of which is all-important, according to the psychical activities of which they are the seat. Nor can we fail to be struck with the existence of certain superadded convolutions, which constitute a marked and striking difference between one human brain and another, and a most characteristic distinction between the human and the Simian brain. The contrast is indeed striking in respect to these superadded convolutions and their complexities, in the cerebral hemispheres of the lowest and the highest races, the Negro or Hottentot, and the Teuton or Celt.

But the researches of the embryologist have shown that the human brain, in its evolution and ascensive development, passes through the phases in which it appears in the Negro, Malay, American, and Mongolian races, and finally reaches the highest or Caucasian type, so that, in fact, the leading characters of the typical races of mankind are virtually and simply representations of particular stages of the highest or Caucasian race. And hence, if the anterior lobes of the brain are the seat of the highest intellectual activity, fulness of development, for the influence of organic size on the energy of function is an established physiological fact, and complexity of structure in these lobes are sure indications of the elevation of the racial type; while the converse is equally true, as Gratiolet from extended observations has fully established, viz., that simplicity of structure and perfect symmetry of shape and arrangement among the convolutions on both sides of the hemispheres are indis-

* A most valuable treatise on the "Convolutions of the Human Brain," has been published by Dr Alexander Ecker, Professor of Anatomy in the University of Freiburg, Baden; and of which an admirable English translation, by permission of the author, has recently appeared, by Mr. John E. Galton, M.A. Oxon, M.R.C.S. and F.L.S., etc.

putable marks of degradation of function and of inferiority of race. He has demonstrated that in the three stages of frontal cerebral development, the superciliary or inferior, the middle, and superior frontal—in other words, the intellectual regions of the brain—there exists among the lowest and the highest types of humanity differences in the size and complexity of structure in the convolutions, and in the relations of the second or middle, both with the inferior and superior stages, which accord with, and indeed are found to indicate and to correlate, corresponding differences in the psychical activities of the race. He has accordingly dwelt on the importance of studying with scrupulous care and attention the complexities, relations, and arrangements of these convolutions in the superior frontal and coronal stage, in all the typical races, with a view to their psychical significance, and thus to the elucidation and advancement of the study of ethnic psychology.

According to Agassiz, a peculiar conformation characterises the brain of the adult Negro, and, among other singularities, it bears in several particulars a marked resemblance to the brain of the orang outang, and its development never goes beyond that developed in the Caucasian in boyhood. The illustrious and philanthropic Tiedemann, the warm and zealous friend of the African Negro, is constrained to admit that in him the anterior part of the hemispheres of the brain is more pointed and narrower than it is in the European; and he makes this farther concession to its inferiority, that the gyri and sulci on both hemispheres are more symmetrical than in the brain of the European, and that in this respect it resembles the brain of the orang outang. Tiedemann, however, dwells on the fact that, in the case of a certain Bosjesman woman, the *Hottentot Venus*, the narrowing of the anterior part of the hemispheres was still more remarkable than in the Negro. This allusion of Tiedemann to the *Hottentot Venus* brings vividly to my recollection the eager and intense curiosity and wonder with which, in the days of my boyhood, I gazed on this *Hottentot Venus*, when she was publicly exhibited at Newcastle-upon-Tyne. She subsequently died at Paris, and had the honour of being anatomised by Cuvier. "Fortunately," says Professor Huxley, "Gratiolet has also particularly described and carefully figured her brain, and his remarks upon the subject are exceedingly important and instructive. The convolutions," says he, "of her brain are relatively little complicated. But what strikes one at once is the simplicity, the regular arrangement of the two convolutions, which compose the superior stage of the frontal lobe. These folds, if those of the two hemispheres be compared, present an almost perfect symmetry, such as is never exhibited by the normal brains of the

Caucasian race. This regularity—this symmetry, involuntarily recal the regularity and symmetry of the cerebral convolutions of the lower species of animals. There is, in this respect, between the brain of the white man and this Bosjesman woman a difference such that it cannot be mistaken." After pointing out other differences, he concludes by saying, "the brain of the Hottentot Venus is thus in all respects inferior to that of the white men, arrived at the normal period of their development. It can only be compared with the brain of a white who is idiotic from an arrest of cerebral development."

In the Philosophical Transactions of the Royal Society for 1864 is a most interesting and valuable Memoir, by Mr. Marshall, F.R.S., Surgeon to University College Hospital, on the Brain of a Bushwoman, which had been sent to him from Cape Town by a former pupil, Mr. Dyce, and which had reached him in a state of perfect preservation. In this interesting communication, well worthy of the most careful study of every physiological anthropologist, Mr. Marshall has compared the fissures, lobes, and convolutions of this preserved brain with the same parts in the brain of the European—the brain of the Hottentot Venus, so far as that was possible, as well as with the brain of the higher anthropoid apes; and finally, he says the establishment of the conformable development of the brains of the Bushwoman and Hottentot Venus (herself believed by G. Cuvier to have been a Bushwoman of small stature) is a step gained in cerebral anatomy, and their decided and common inferiority to the European brain may justify the expectation that future inquiries will show characteristic peculiarities in degree of convolutional development in the leading races of mankind.

Most heartily do I join with Mr. Marshall in the hope that a more searching and scrutinising examination and comparison than has hitherto been made will be instituted into the convolutional developments of the typical races, with a view to their psychical significance, and especially in reference to the superadded convolutions of the cerebrum, believing, as I am greatly inclined to do, that the higher and more complex of our psychical operations of comparing perceptions and the formation and elaboration of ideas have their seat in the vesicular matter of these superadded convolutions, forming as they do such extensive intermediate tracts of convolutions, which receive no fibres from either crus, central ganglia, or corpus callosum, but are at once the most characteristic convolutions of the human brain, and constitute the difference of one brain from another, and a broad line of demarcation between the human and Simian brains. Again, while the perception of sensations and the emission of motor impulses are psychical operations of the simplest cha-

racter, and are common to man and the lower animals—it is evident, on the one hand, that the sensations transmitted upwards must impinge upon those parts of the surface of the grey matter in which the fibres of the sensory tract or ganglia end; and, on the other hand, that wherever volitional power originates, the downward starting point of the ideo-motor impulse must be in some convolutions connected by fibres with the motor ganglia or tract.

And hence, the withdrawal of the nerve cells in the superadded convolutions alike from all fibres, from either crus, central ganglia, or corpus collosum, is most significant, and if they are the seat of our higher and more complex mental activities, for reasoning and reflection, how interesting and important becomes the duty to study and compare these different superadded convolutions as to the degree of complexity in their relations with other parts and in all the typical races.

One thing is certain, that alike in the brain of the Negro and of the Hottentot the cerebral organisation falls far short of that fulness of development and elaboration and complexity of structure which characterises the brain of the Indo-European, and hence is not the reason abundantly manifest why the large-brained European differs from and so far surpasses the small-brained savage in the complexity of his manifestations, both intellectual and moral? But I need dwell no longer on the psychological significancy and importance of the palpable and obvious structural differences which we meet with among the convolutions of the brain of civilised and savage man. But I must say I do look forward to the future revelations of the microscope, in reference to the differences in the ultimate structure of the vesicular matter in the three great divisions of the brain among the typical races of man and in the superadded convolutions, as promising the most interesting and instructive results. Already my friends Dr. Beale and Dr. Lockhart Clarke have proved to demonstration that perceptible differences exist in the minute anatomy of the grey matter in the convolutions in the brain of man and that of the monkey and the highest anthropoid apes. Nay more, that among the inferior animals themselves of distinct or different species, as the dog, the cat, and the sheep, the structural differences in the grey matter are so clear and well defined, that if a specimen from any one of these be placed in the field of the microscope, they can at once, and without hesitation, name the animal from which it has been taken.

I cannot, however, conclude this paper without referring to the interesting experimental researches of Dr. Ferrier into the functions of different parts of the brain. I had the pleasure of hearing Dr. Ferrier himself give an account of them at the

Bradford meeting of the British Association last year, and my friend, Dr. Carpenter, in an appendix to his valuable treatise on Mental Physiology, recently published, has given an able exposition on these experimental researches and of their physiological bearings. Dr. Ferrier's plan was to uncover and Faradise particular parts of the encephalon, and then to note the movements which followed. Or, to use the words of Dr. Carpenter, "Dr. Ferrier's researches were made by the localised application of an electric current to different parts of the cortical substance of the cerebrum, and to other ganglionic centres, forming part of the brain, the animal having been previously rendered insensible by chloroform, so that the movements excited by the stimulation may be regarded as the direct products of the physical changes induced." We are told that Dr. Ferrier has made a series of experiments on monkeys, but the details of which have not yet been published. To their publication we must all look forward with the greatest interest, on account of the close conformity which the simple arrangement of the convolutions in the brain of the monkey bears to their complicated disposition in the human cerebrum. But it is not to be forgotten that the animals are narcotised by chloroform before Faradisation, and what influence that state may have in veiling or otherwise affecting their psychological manifestations is not to be overlooked. I quite agree with Dr. Hughlings Jackson that Dr. Ferrier's experiments are a starting point for what may be called a comparative physiology of the convolutions, and that they bear very closely on the methodical investigation of epilepsy and epileptiform convulsions in men. Dr. Hughlings Jackson says truly: It would be difficult to exaggerate the significance of researches, which show us how and where the clinical physician's physiological part of his work may be made as it were continuous with physiology, usually so called. Dr. Ferrier's researches prove this much, that the individual convolutions are separate and distinct centres, and the anterior portions of the cerebral hemispheres are the chief centres of voluntary motion and for the active outward manifestations of intelligence.

We must all look forward hopefully for further revelations from the experimental researches of Dr. Ferrier into the functions of the brain, though I cannot conceal my own misgivings as to their throwing much light on the organography of our psychical faculties. And, in conclusion, let me say, in the words of Dr. Broadbent, to whom we are so much indebted for our knowledge of the structure of the brain: "It is to be hoped that a fuller knowledge of the structure of the cerebral hemisphere, the instrument of thought, will give greater precision to our speculations on the physiology of thinking; it will certainly

afford a firmer basis for the application of pathological facts to the elucidation of physiological problems."

The following paper was read by the Director :

On the RELATIVE AGES of CREMATION and CONTRACTED BURIAL in DERBYSHIRE in the NEOLITHIC and BRONZE PERIODS. By ROOKE PENNINGTON, LL.B.

APPROACHING the study of Prehistoric Archæology, as a reader of the lighter kind of its literature and a casual observer, I found, on more careful examination in my own district, my notions somewhat disturbed.

I had the popular impression that stone implements and contracted burial, bronze instruments and cremation, were usually associated, and that probably a difference of race was indicated by a difference in custom. But when I examined what had been the results obtained by actual explorers, I soon came to the conclusion that, however correct this rule of association might be for Wiltshire, in the district of the Peak of Derbyshire, with its Staffordshire out-lier, it certainly did not hold good, and that none but a fallacious argument could be drawn from combining the two localities. I do not know that the matter has been fully discussed, I propose therefore to take the interments described by Messrs. Bateman and Carrington in Derbyshire and Staffordshire, as affording a capital test, and to see what conclusion as to this point they lead to. My own work in the neighbourhood of Castleton is too insignificant to catalogue; I will refer to it whenever it seems to throw any light upon any particular detail.

The tumuli of the Derbyshire district may be divided into three distinct classes. 1. The long barrows, nearly every one of which is chambered. Some eight or ten of these occur; in them is interred (for the most part in a contracted position) a race possessed of a peculiar long skull. 2: The round or bowl-shaped barrows, containing both burnt and contracted burials, accompanied by both stone and bronze implements. 3. Other round barrows, containing bodies laid at full length, almost invariably accompanied by iron utensils, and in every case bearing marks of less antiquity than the two former classes.

The first two groups are both within the period termed by Mr. Boyd Dawkins "Prehistoric," the third is either wholly within historic times, or if partly prehistoric, not very far distant in its commencement from the dividing line of the two epochs. The first and third groups being clearly marked off,

one by signs of antiquity and race distinction, the other by signs of modern date, from the intermediate group, it is the latter series I wish to discuss. To it belong nine out of ten of the Derbyshire tumuli.

As I have mentioned, some of these barrows contain skeletons of persons buried in a contracted position, knees drawn up towards the breast, others, the burnt remains of bodies, consumed by funeral fires. Some contain stone implements alone, others have also bronze weapons and ornaments deposited with them. It is to see whether any rule of association can be obtained, that I have prepared the following statistics.

Messrs. Bateman and Carrington have recorded the results obtained by opening 262 distinct interments in Derbyshire and Staffordshire. There are a few others mentioned by them, but not so described as to be of value to science.

I will first show how stone and bronze "finds," respectively, are accompanied, *i. e.* how the body had been disposed of; and will then take the two classes of burnt and contracted burials, and describe what implements (if any) were deposited with each.

Mr. Bateman's researches are treated of by Sir John Lubbock in "Pre-Historic Times," first edition, p. 91, *et seq.*; third edition, p. 135, *et seq.*; and also in a very able paper read in 1865 before the Ethnological Society, and printed in vol. iii, (n. s.) of the Transactions, p. 309. This latter paper I had not seen when I penned my remarks.

Sir John Lubbock's conclusions are — *First*. ("Pre-Historic Times," first edition, p. 101,) that in Wiltshire, "nearly all the cases of bronze were in interments preceded by cremation, but in the northern interments the reverse is the case." This inference he draws from tabulating the results of Bateman and Sir R. C. Hoare (in Wilts) and contrasting them. He afterwards adds the tables together, and from the resultant table arrives at the conclusion (*op. cit.* p. 103.) *Second*. "That during the bronze age the dead were generally burnt; that in the neolithic stone age it was usual to bury the corpse in a sitting or contracted posture; and in short, it appears probable, although far from being satisfactorily established, that in Western Europe this attitude is characteristic of the stone age, cremation that of bronze."

In this paper I endeavour to show—*first*, that in Derbyshire the reverse of the Wiltshire rule does not hold good, and that no rule of association can be laid down; and *second*, that the general conclusion of "contracted burial, stone; cremation, bronze" ought not to be arrived at by combining results from different districts clearly possessing different customs and then

striking an average; but that the fact of this difference of custom should be taken to show tribal distinctions; that in fact, no general rule can be established which shall apply to the whole of Western Europe.

Sir John Lubbock's opinion, viz., that in the north extended burial is characteristic of the bronze age, marked here as (*first*), is based on the fact, that in his Bateman list, out of thirty instances of bronze, ten only were burnt, fifteen were contracted, and five extended. My tables, prepared as mentioned below, give twelve burnt and eighteen contracted, so that although the figures are different the proportions are the same. Because the number of contracted bronze cases exceeds that of the burnt bronze ones, Sir John seems to arrive at the opinion above mentioned, but I suggest that it is necessary to compare these numbers with the total numbers of the two kinds of burial. When it appears that there are in all 150 contracted burials to eighty-six burnt burials, the excess vanishes, there is simply a due proportion of the bronze cases. As shown, the percentage of contracted bronze cases is twelve per cent., as against fourteen per cent. burnt bronze cases; indeed, if the mere figures without their ratios proved anything, they would equally prove contracted burial to be a neolithic characteristic, for there are seventy-six contracted stone cases against forty burnt stone ones. The ratio is, however, very nearly the same.

Again, as to the opinion marked as (*second*); although in Wiltshire stone and contracted burial, bronze and cremation go hand in hand, yet in Derbyshire this association does not exist, and I therefore consider it probable that, could other districts be as carefully examined as these two have been, we should find great variety, and not uniformity in their customs. At any rate, there ought to be a much greater mass of evidence produced to overwhelm the clear contrary result from Derbyshire, before any general rule (to which Derbyshire would still be an exception) can be safely laid down.

I may say that my figures are drawn from carefully prepared tables of my own, and exclude the Yorkshire results chronicled by Mr. Bateman, this being an entirely separate district from the Derbyshire and Staffordshire one. These results are included in Sir John Lubbock's tables, and he omits some of Bateman's Derbyshire finds which I have taken into account. In all I have catalogued 344 distinct cases of burial, and have then eliminated eighty-two for such reasons as uncertainty; the remaining 262 relate entirely to the district of the Peak and Staffordshire. It is not without great diffidence that I venture to submit views disagreeing with those of Sir John Lubbock.

Of cases in which stone implements alone were found (metal

being entirely absent), Bateman enumerates sixty-six, Carrington fifty-one.

Of Bateman's: In one the corpse was extended (out of twenty-two extended cases), in forty-four it was contracted (out of ninety-one), in twenty-one it was burnt (out of forty-four).

Of Carrington's: In none was the corpse extended (out of four), in thirty-two it was contracted (out of fifty-nine), in nineteen it was burnt (out of forty-two).

Combining these: Stone alone occurred in one out of twenty-six extended, or about four per cent.; seventy-six out of 150 contracted, or about fifty per cent.; forty out of eighty-six burnt, or about forty-six per cent.

Thus it will be seen that, whilst in one solitary case a stone "find" was of the extended type, the proportion of burnt and contracted interments accompanied by stone alone is very nearly equal. The percentage of the whole number of stone "finds", with contracted burial, is sixty-five, of stone "finds", with incineration, thirty-four.

Of cases in which bronze occurs, but no iron is present though stone may be, Bateman records nineteen and Carrington twelve.

Of Bateman's: In one the corpse was extended (out of twenty-two), in twelve it was contracted (out of ninety-one), in six it was burnt (out of forty-four).

Of Carrington's: In none was it extended (out of four), in six it was contracted (out of fifty-nine), in six it was burnt (out of forty-two). One of these last was doubtful, and there is another case uncertain.

Combining these: Bronze (without iron) occurred in one out of twenty-six extended, or about four per cent.; eighteen out of 150 contracted, or twelve per cent.; twelve out of eighty-six burnt, or fourteen per cent.

Again we have one exceptional case in the extended burial class, whilst again we have very nearly the same proportion of contracted and burnt interments associated with bronze as with stone, though there is a slightly larger percentage of bronze with incineration than of stone so accompanied. The percentage of the whole number of bronze "finds" with contracted burial is fifty-eight, with incineration thirty-eight.

The ratios of the stone cases were sixty-five and thirty-four respectively. It will be noticed that the number of contracted burials of the stone and the bronze classes greatly exceeds that of the burnt burials. The percentage is very similar, fifty-eight as against sixty-five, thirty-eight as against thirty-four, though giving a slight advantage to the burnt bronze cases, is surely a very insufficient basis upon which to build a theory. It is clear

that those who deposited stone implements in the graves of their dead and those who placed there articles of bronze, shared pretty equally the difference of custom in the interment of the body.

Take now the interments classified according to the mode of burial.

Bateman records the discovery of ninety-one contracted interments; of these, forty-four were accompanied by stone alone, twelve by bronze, three by iron (two of which were exceedingly peculiar and quite abnormal), thirty-two by no implement.

Carrington records fifty-nine contracted interments; of these, thirty-nine were accompanied by stone alone, six by bronze, none by iron, twenty-one by no implement.

Combining these, we have 150 contracted interments, of which seventy-six were accompanied by stone alone, or about fifty per cent., eighteen by bronze, or about twelve per cent., three by iron, fifty-three by no implement.

With the contracted interments, let us compare the results of those by cremation.

Bateman records forty-four burnt interments; of these, twenty-one were accompanied by stone alone, six by bronze, one by iron, sixteen by no implement.

Carrington records forty-two; of these, nineteen were accompanied by stone alone, six by bronze, one by iron, sixteen by no implement.

It will be noticed that Mr. Carrington's results, both in contracted and burnt catalogues, give a higher proportion than Mr. Bateman's of stone "finds," and a lower proportion of bronze "finds."

Combining the two we have eighty-six cases, of which forty were accompanied by stone alone, or about forty-six per cent., twelve by bronze, or about fourteen per cent., two by iron, thirty-one by no implement.

Of the twenty-one cases recorded by Mr. Bateman as presenting cremation with stone implements alone, ten are put down as primary interments, four as secondary, five as doubtful, no observation is made as to two. Of the sixteen with no implements, seven are primary, three secondary, and six doubtful. So of the nineteen cremation and stone cases recorded by Mr. Carrington, eleven are put down as primary, three as secondary, and five are doubtful or unrecorded. Of the sixteen with no implement, one is primary, one secondary, and the other fourteen are doubtful or unrecorded.

From these calculations, the remarkable interments at the Ferns,* Foremark Hill, are omitted.

* "Ten years' Diggings in Celtic and Saxon Grave Hills," p. 42.

Recapitulating, it will be seen that the percentage of contracted cases found with stone alone and of burnt cases found with stone alone, was respectively fifty and forty-six per cent. of the whole finds, whilst the percentage of contracted cases found with bronze (no iron being present), and of burnt cases so found, was respectively twelve and fourteen per cent. Thus the stone cases were almost equally numerous, and the bronze cases were within two per cent. of each other in either class, a fact showing conclusively, as it appears to me, that, in this district, no rule of association can be drawn from the tumuli, save that the people who used stone only and the people who also used bronze (whether of the same race or not) both adopted the customs of incremation and of burial in a contracted position.

The conclusion to be drawn from the cases above tabulated, is fully borne out by the examination of the contents of separate tumuli. For example, at Mootlowe* the primary interment was a contracted one accompanied by stone alone, a secondary one is burnt and accompanied by bronze; whilst at Ribdenlowe† the primary interment is a burnt one with stone alone, the secondary a contracted one with bronze. Whilst nothing is more certain than that bronze is an index of later date than stone, burnt and contracted interments seem to be indifferently primary or secondary. At Bostorn,‡ one primary interment is contracted, with stone alone, another primary interment is burnt, with no implement, whilst two secondary ones, also unaccompanied, are contracted, and strange to say, all these four are in one big cist. So at Gratton Hill,§ five interments, three burnt and two contracted, are found in close proximity and with no indication but that they were all of the same period. At Cronkstone Hill,|| a contracted interment was laid bare with a burnt one just above it, and, to use Mr. Bateman's words, "apparently interred at the same time." In the Sigget barrow, near Castleton, opened by the writer, two contracted and four by incremation were found, and with every reason to suppose them to be of about the same time. At Throwley,¶ the two primary were burnt, one of later date was contracted. In the large barrow at Swinscoe** there were fourteen interments, the primary one was contracted, of the other thirteen, undistinguishable as to relative date, eight were contracted, four burnt, and one uncertain; and at one of the Stanshope borrows,†† there

* "Vestiges of the Antiquities of Derbyshire," p. 51.

† "Ten Years' Diggings in Celtic and Saxon Grave Hills," p. 127.

‡ "Vestiges of the Antiquities of Derbyshire," p. 70.

§ *Ibid.*, p. 79.

|| "Ten Years' Diggings in Celtic and Saxon Grave Hills," p. 56.

¶ *Ibid.*, p. 112.

** *Ibid.*, p. 133, *et seq.*

†† *Ibid.*, p. 158.

were seven interments, some burnt, some contracted, the latest being a contracted one accompanied by a bronze dagger.

Instances could be multiplied almost indefinitely—in fact, it is the rule to find interments in the two modes in the same barrow. It cannot be truthfully said that this may have arisen from later races adopting the burial places of their predecessors, as the Anglo-Saxons did, because those interments which on the prevailing theory belong to earlier races, viz., the contracted ones, are frequently, as shown by their position, of posterior date to interments by incrimation. Everything in the Derbyshire district leads to the conclusion that, although contracted burial *may* have been customary a little earlier than the mode of burning the bodies, yet that both methods were adopted by the same races, and that the neolithic and bronze peoples alike used both. It is of course difficult to *prove* any interment neolithic; it may always be said that we do not know whether it may not be the grave of some poorer person in the bronze age or a sepulchre which has been pilfered from. It is only by the multiplication of cases and by various little indications that one becomes convinced that a great number of those interments containing stone implements alone are of the neolithic era. But there can be no similar doubt as to interments containing bronze, and as we have seen, there are some in the contracted form and some by incrimation in nearly the same proportion.

In fact, both Mr. Bateman and Mr. Carrington came by their independent researches to a conclusion exactly opposite to the popular one. Mr. Bateman notes the instances of bronze weapons associated with calcined bones as an unusual occurrence* and Mr. Carrington gives his view as follows:—†

“The few stone axes found during our researches have been uniformly associated with the brazen daggers, and were replaced by the plain axe-shaped celt at a slightly later period, but in no other instance have they accompanied an interment by cremation” (*i. e.* than the one at Throwley here described); “indeed, the instances in which the brass dagger has been found with burnt bones bear so small a proportion to those in which it accompanies the skeleton that we may conclude there was a marked though gradual change in the mode of burial introduced about the time when the knowledge of metallurgy was acquired. There is, however, evidence that the ancient rite of burial was resumed at a later period, dating but little, if at all, previous to the occupation of the country by the Romans.”

Mr. Carrington appears to refer in this last sentence to the practice of extending the corpse on burial. As to the rest of his

* “Ten Years’ Digging in Celtic and Saxon Grave Hills,” p. 57.

† *Ibid.*, p. 155.

observations, he seems to have confined himself to bronze, or, as he calls them, brass, daggers. It will be seen from the paper that of bronze implements of various kinds about the same percentage occur of both burnt and contracted burials.

In connection with the relative ages of the two kinds of burial, it is exceedingly interesting to note the character of the stone implements found in association with weapons or ornaments of bronze. Mr. Bateman records eleven instances (of which in two cases the association is doubtful), and Mr. Carrington records ten instances. Omitting the two doubtful cases, Mr. Bateman gives us—1, a diminutive bronze celt with arrow head; 2, splendid bronze dagger with small beautiful basalt axe; 3, one large dagger with very rude flint chips; 4, fluted dagger, with worn flint implements and chips; 5, pin (inserted in wood), with neat arrow-head; 6, dagger and flint spear-head; 7, archaic dagger with good flints and bone implements; 8, awl, with three implements of light flint.

Mr. Carrington gives us—1, a bronze dagger with three rivets, with flint arrow-point; 2, a bronze dagger with neat flint instrument; 3, two small slightly-ornamented pieces of bronze, with good flints and bone implements; 4, bronze pin and two small flints (traces of flint saw on bones); 5, bronze clasp and three-cornered flint; 6, bronze dagger with basalt axe, etc.; 7, fragments of bronze and good arrow-head; 8, bronze dagger (elegant) and rude flint; 9, bronze armilla and flints; 10, bronze awl and flints.

It will be found that in nearly every case the flint implements are either very good or very poor. The probability seems to me to be that the good flints are the earlier, the poor ones the later. Before the introduction of bronze, considerable dexterity in the manufacture of stone weapons had been attained. With the use of bronze came an immediate improvement in stone; thus we see Mr. Carrington says he has always found that stone axes were accompanied by bronze. Then the use of bronze would spread. Stone to a great extent would be superseded, and it would become a custom to deposit in graves, not on account of its intrinsic value, but through a superstitious regard. Such a veneration for stone, long after its use had been discontinued, has been found to exist in many nations, and England is no exception. Therefore I conclude that very inferior stone implements, and often only flint chippings, being found with many of the bronze articles, that the former were placed near the ashes of the deceased as amulets. This I find borne out by the associations connected with the finding of quartz pebbles in barrows. Mr. Bateman mentions nine instances. Quartz pebbles are foreign to the localities in which most of the tumuli exist. They must have been intentionally brought to

the spot and cast into the mound—in fact, in at least one case, the pebble had been placed in the hand of the deceased. Of the nine cases, two are with contracted bodies, two with burnt bodies, one with pottery only, and four with extended bodies (extension being universally allowed to be a mark of very late date). In two of the nine cases iron occurs, in four bronze, two are without implement, and one is with a large assemblage of stone weapons. So, in the cases recorded by Mr. Carrington, nearly every one is associated with either iron or bronze.

It is probable that quartz pebbles may often have escaped observation, but those instances which have come under my own personal notice fully bear out the conclusion that they were amulets, in vogue when the real use of stone had more or less been replaced by a superstitious veneration for it. The mental process by which this comes about needs no remark from me.

Turning to other points of observation, which may be found to afford some indication pointing to difference of race between the neolithic and bronze peoples in Derbyshire, I find the same absence of well-defined distinction. Just as the modes of interment are the same for both, other customs appear to prevail. For example, Bateman and Carrington record twelve cases of jet ornaments. In every case where the sex was determined, the body was that of a female, showing that prehistoric human nature was very much like that of to-day. Mr. John Evans attributes jet ornaments to the end of the neolithic and the bronze periods,* and this is fully borne out by the Derbyshire examples. In one case the body is extended, in two it was burnt, and in seven it was contracted. Two are uncertain cases. In two cases only is bronze present, in three no implement, and in seven stone alone was found. One of the stone cases is specially recorded by Mr. Bateman as bearing all the appearances of the pre-metallic period.† I may add that of three instances near Castleton, in which I myself have found jet, two were contracted and one burnt, two with stone only, and one (one of the contracted cases) with bronze. Thus, if we are to take jet as a sign of a later period, we should rather come to the conclusion with Mr. Carrington that contracted burial is of less antiquity than incineration.‡ In other classes of associated articles the same want of any well-defined line exists. Of four cases of perforated axes, two accompany contracted burial, one cremation, and one extended.§ Polished stone celts, flint arrow-heads, and perforated

* "Ancient Stone Implements," p. 406.

† "Ten Years' Diggings in Celtic and Saxon Grave Hills," p. 26.

‡ The instances in Bateman are Alsop Moor, Windle Hill, Cowlowe, Middleton Moor, Shuttlestone, Low Bent, Dowel, Grindlow, Netherlowe, Hill Head, Monsal Dale, and Castern.

§ These are at Carder Lowe, Kenslow, Parcellly Hag, and Throwley

bone pins are found alike with both classes of the interments we are discussing. Iron pyrites appears also to have been found in all sorts of association. True, in no case was it found, or recorded, by Bateman, with bronze, but then he only mentions seven instances, and of these two are of the iron period. It is, therefore, pretty certain to have been in use during bronze times. That the notion was to enable the deceased to obtain light or fire is clear from the fact that in four cases the iron pyrites was accompanied with a circular piece of flint, no doubt a strike-a-light.

It seems strange that no traces of the use of lead during the neolithic or bronze periods should, so far as I know, exist in Derbyshire. Lead must have then been prodigiously plentiful, and not only would it necessarily attract attention from its weight and appearance, but it is found frequently fused, accidentally, on the site of funeral pyres; and this not only where the body had been burnt, but where it had been buried in a contracted position and a fire had been lit, apparently for the purposes of the funeral feast. Lead, however, does not help us to any conclusion.

I had thought that, perhaps, some distinction between the bronze and neolithic peoples might be drawn from other customs relating to burial apart from the disposal of the body. I refer more especially to the two customs of sutteeism, or the slaughter and burning of slaves at the funeral, and infanticide on the death of the parent. I do not wish unduly to vilify prehistoric races, but the conclusion that these customs were in existence in Derbyshire is based on the following facts:—

Bateman and Carrington record twenty-three cases of the bones of children buried with those of adults. In many cases the bones of the children are not those of infants, but of girls or boys of from four to ten years of age. The orphan has clearly been put to death on the decease of the parent, who would have provided for it, no doubt to save the trouble of rearing and maintaining it. One case particularly is very clear, at Parwich;* the bones of two children had been burnt and placed at the feet of the skeleton of (presumably) their father. The adult bones are frequently those of females, but by no means always. It is not possible to save the credit of the bronze folk, for they shared this custom equally with the stone people. Out of the twenty-three cases, four are interments containing bronze, and one of the stone cases is expressly stated by Mr. Bateman to be contemporaneous with a bronze case. Considering the relative number of bronze and stone "finds," it will be seen that the former have their full proportion of these child-murder cases. In one in-

* "Vestiges of the Antiquities of Derbyshire," p. 49.

stance in my own explorations I found the skeleton of a child, apparently about eight years old, placed at the feet of a female skeleton, accompanied by a bronze ring.

The bones of the animals eaten at the funeral feasts—the red deer, the shorthorned ox, the goat, the pig, and the dog—are the same in both classes. The shorthorned ox and the pig are the most frequent, and I think the conclusion of their having been domesticated may be drawn from this. The horse is an exception; it appears, as a rule, only in the later interments, and was probably introduced from the continent long after the neolithic animals came over.

In pottery there is a manifest improvement in bronze times, though much of the crockery of that era is quite as rude as in the stone age. Still there is no distinction of form or ornamentation which can be drawn between the two periods; there is nothing more than that improvement which an advance in civilisation would necessarily bring about.

Time and want of skill forbid my going into the difficult question of whether any race distinction can be drawn from the skulls of the bronze and stone users respectively in Derbyshire. Here, if anywhere, the line will be drawn. I am fully convinced that no customs of burial will give it. I am too ignorant of cranio-logy to offer an opinion, further than that, as far as I can see, there will be the greatest difficulty in making a classification of Derbyshire skulls fit in with the division from the use of stone and metal. I should rather incline to the conclusion that, if bronze were introduced by an invading race, history did but repeat itself in the Anglo-Saxon conquest, and that, as upon that event, the Britons long held out in the mountain fortresses of the Peak, and were, in fact, never thoroughly subdued, but rather intermingled with the invaders; so the bronze conquerors, if conquerors they were, did not exterminate the neolithic race, but intermingled both their blood and their customs with the stone people. But until the introduction of bronze by a conquering nation is established, I feel that, in Derbyshire at least, there is every reason to believe that the same races, possessing the same customs, and constant in the variation of those customs, occupied the district both in neolithic and bronze times.

DISCUSSION.

Mr. BOYD DAWKINS said that the classification of the tumuli of Derbyshire, into the ages of stone, bronze, and iron, was not altogether satisfactory, because it is based partly on negative evidence, the non-discovery of metal, and partly on the presence of flint flakes and arrow-heads. Few polished stone implements had been met with, while rude flint chips and flakes were very abundant. The latter, how-

ever, cannot be viewed as proof of the neolithic age of the tumuli in which they are found, because they were used in burials in Britain as late as the Roman occupation. For example, in the Romano-British cemetery at Hardham, near Pulborough, which he discovered, and described in the *Sussex Archaeological Collections*, they were met with inside the oaken chests, which contained the ashes, sandals, and various articles, including Roman coins, of the dead. Flint flakes and arrow-heads were used in the bronze stage of culture, and were most probably buried along with the bodies or the ashes of the poorer classes, while the wealthier and more powerful were honoured with bronze articles. The absence, therefore, of bronze does not imply the neolithic age of a tumulus. The contracted posture of the skeleton, the presence of polished stone implements, the small stature of the skeleton, the long skull with small upper jaw and small cheek-bones, are, in his opinion, the principal characters, which, taken together, stamp the neolithic age of burial places in Britain.

Colonel A. LANE FOX, in reply to a remark made by Mr. Boyd Dawkins, F.R.S., said that it was true, as stated by the latter, that he had found in a pit near Broadstairs, in the Isle of Thanet, flint flakes associated with Roman pottery, and the remains of fauna of the Roman period, in a position which left little doubt that they were interred together. (See "*Journal of the Ethnological Society of London*," New Series, vol. i, p. i.) The flakes were not merely such as were sometimes used by the Romans in their termini to mark a boundary, but contained one or two scrapers and a flint spear-point carefully chipped. He thought it not at all improbable that flint might have been used in this country by some of the wilder tribes of Britons up to the Roman period, and flint flakes may have been employed as symbols in connection with interments even later. No doubt, as Mr. Pennington had said in his paper, a ruder class of stone implements may have been employed as amulets, and for similar purposes, towards the close of the stone age and during the age of bronze; but, on the other hand, we have clear evidence in the palæolithic period that the ruder implements of that period were used previously to the more advanced and carefully-formed implements of the neolithic age. With respect to the quartz pebbles supposed by Mr. Pennington to have been used as amulets in the graves, he had no doubt that such was the case, as white quartz stones were frequently deposited by the Irish at the present time as votive offerings at their holy wells, and he had himself found them in ancient graves in Ireland in position and number that made it appear probable they had been used for that purpose.

The President referred to elaborate papers on the subject by Sir John Lubbock published in the "*Transactions of the Ethnological Society*," and in his work "*Prehistoric Times*."

The following paper was read by the Director :

MYTHOLOGICAL BIRDS ETHNOLOGICALLY CONSIDERED. By
Miss A. W. BUCKLAND. [Full abstract].

BIRDS were used as emblems of almost all the very ancient divinities ; but, notwithstanding the great variety which have thus been employed, it seems possible to select some birds as peculiarly adopted by certain races, so as to render their presence in the mythologies of other races, ground for a belief in an admixture, or of the conquest, of one by the other. Among Turanian races, I think we shall find a preference given to the goose or swan, the hawk and the peacock ; among the Semites, to the dove ; and among the Aryans, to the eagle, and although these birds are often supplemented by others, yet they stand out as more decidedly distinctive of race than any others.

I.—Closely following in the track of the serpent, often, but not always, associated with, and generally running parallel to it, we find the Hansa, or sacred Brahminical GOOSE, still adored in Ceylon, and which appears to have been almost the earliest bird to receive divine honours. On all the temples of India whereon the worship of the serpent is delineated, the goose also occurs as an ornament, or as in some way connected with the mysterious worship of that deadly reptile. Sir E. Tennant says, "There is something still unexplained in the extraordinary honours paid to the goose by the ancients, and the veneration in which it is held to the present day by some of the Eastern nations. The figure that occurs so frequently on Buddhist monuments is the Brahminical goose (*casarka rotilla*), which is not a native of Ceylon, but from time immemorial has been an object of veneration there and in all parts of India. Among the Buddhists* especially, the hansa has attracted attention by its periodical migrations, which are supposed to be directed to the holy lake of Manasa in the mythical regions of the Himalaya. The poet Kalidasa, in his "Cloud Messengers," speaks of the Hansa as "Eager to set out for the sacred lake." Hence, according to the Rajavali, the lion was pre-eminent among beasts, but the hansa was king over all the feathered tribe. "The goose is at the present day the national emblem emblazoned on the standard of Burmah, and the brass weights of the Burmese and Javanese are generally cut in the shape of the sacred bird, just as the Egyptians formed their weights of stone after the same model."† Sir Gardiner Wilkinson thinks that the Egyptians did not pay divine honours to the goose, although it was the emblem of Seb, the father of Osiris, but upon this see note by

* It is remarked that Buddhism is peculiarly the religion of Turanian races.

† Tennant's "Ceylon," p. 484.

Dr. Birch, of the British Museum, in Sir E. Tennant's "Ceylon," p. 487. The reason assigned for the veneration in which this bird was held by the ancients, is its fondness for its young. Aristotle praises its sagacity, Ælian dilates on its courage and cunning, and its attachment to man, and Ovid ranks the goose as superior to the dog in the scale of intelligence; it was, as we know, one of the emblems of Juno, and it was the sacred geese kept in her temple which saved the Capitol from the invasion of the Gauls; but it is a singular fact that this superstitious veneration for the goose, which seems to have originated in the East, had found its way to Britain before the time of Cæsar, who relates "that the ancient Britons held it impious to eat the flesh of the goose";* yet Wilkinson tells us that it was eaten largely in Egypt, even in those places where Seb, to whom it was sacred, was worshipped. Leslie, in his "Early Races of Scotland", says, "The glorification of the goose in the West was by no means confined to the Britons, who did not derive this feeling from, although they shared it with, the classical nations of Europe," and in commenting upon the figures engraved on the Scottish stones, adds, "In the Pagan and Planetary worship of Ceylon, three of the figures commonly traced by the person who performs the ceremonies are, the elephant, the goose, and the crescent for the moon, and all these emblems are found on the Scottish stones." Finding such peculiar emblems in two countries so remote from each other as Ceylon and Scotland, and knowing that in the latter country elephants have not existed, at least, during the historic period, the question naturally arises how the superstitions of Asia could have found their way to a land so unknown and barbarous as we are apt to imagine Scotland to have been at the period which the most moderate computation assigns as the date of the erection of these Scottish stones. That there must have been a direct intercourse is evident, for it seems impossible that the same symbols could have originated spontaneously in two countries wholly unconnected, and in one of which the elephant was wholly unknown.

That the superstitious veneration for the goose originated among a Turanian people in the age of totemism seems certain, when we observe how it still lingers among that race in Asia, and there only among the Tamul-speaking people. Fergusson, in his "Tree and Serpent Worship", shows us that wherever the *Dasyus* or Aborigines are represented at Sanchi in water scenes, there are geese represented also; but they are not seen with the Hindus. Then it appears also to have been intimately associated with the serpent myth and the doctrine of the mun-

* Tennant's "Ceylon."

dane egg; it has been seen that it co-existed with that venerable myth in Britain before the time of Cæsar, whose words are confirmed by existing monuments on which both symbols are found together, a similar conjunction occurring in a bronze knife or dagger of serpentine form having a goose for the handle, discovered in Denmark,* as well as in the sculptures of India and Ceylon as already pointed out; but the goose does not appear ever to have been so universally adored as the serpent. It was perhaps the totem of some early powerful Turanian tribe, adopted by alliance into some serpent tribes, but not necessarily supplemental to the serpent everywhere. Thus I have failed to trace it in many countries where the serpent myth undoubtedly prevailed, whilst in others it was evidently connected with it. Whenever it does appear, it is always an emblem of the most ancient of the gods, having an Eastern and pre-Aryan origin; thus in Greece, and afterwards in Rome, we find it among the symbols of Hera or Juno, a goddess whose whole surroundings are Eastern, and who is often spoken of as the first born of Chronus or Saturn, being certainly older than Jupiter, and who may be identified with Saraswati, the sacti or consort of the Indian Brahma, whose emblem was also the goose or swan, and these two divinities are said to have formed the great mundane egg. There are circumstances in the history of Brahma which would lead us to suppose that he was adopted into the Hindu mythology from an earlier race, for although he is looked upon as the creator, he has no temples and comparatively few worshippers among the Hindoos; then also his connection with the mundane egg seems to denote his pre-Aryan origin, for it is remarked that the doctrine of the mundane egg belongs only to the earliest cosmogonies. (See an article on "Demonology," in *Fraser's Magazine* for November and December, 1872.) Moor, in his "Hindu Pantheon," observes that Brahma is never seen seated on his emblem or vehicle, as other gods are, but he gives an example of Saraswati, his consort, seated upon a paddy-bird instead of a goose, observing that this bird is likewise denominated Hanasa in India, and that the same name (Hahnsy) is applied to the heron in some parts of England. Sir E. Tennant likewise tells us that the ibis is denominated Abou-Hansa by the Arabs, and this similarity in the names of different birds may account for some confusion which may be observed in their mythological use.

II.—Moor gives the goose or SWAN as the emblem of Brahma, and here too we may trace the engrafting of Aryan myth upon a Turanian stock. The goose was undoubtedly the original symbol, as seen by the ancient monuments of India, Ceylon, and

* Sir John Lubbock's "Prehistoric Times," p. 34.

Britain; but the Aryans transformed this goose into the more graceful swan of the northern hemisphere, and henceforward the goose disappears, excepting among the aborigines, or is looked upon with contempt, and all the later legends cluster round the swan, making that a bird of mystery and romance, whilst the goose is looked upon, as the pelican was of old, as the type of a fool; yet a singular instance of a survival of old beliefs may be noted here, for we are told, that the first crusaders marched to battle led by a goose and a goat, which they asserted were filled by the Holy Spirit. The swan legends are chiefly traceable to the north, the native home of the swan, but there is an Indian myth of the Apsaras or swan-maidens, who are supposed to be impersonations of the cirrus clouds. Mr. Baring Gould, in his "*Myths of the Middle Ages*", supposes the Greek muses to be representatives of the Indian Apsaras, and relates the Cyprian legend in which Nemesis, flying in pursuit of Zeus, took the form of a swan, and dropped an egg from which issued Helen, and quotes many mediæval legends in which maidens are transformed into swans; and to one of these Godfrey of Bouillon traced his origin. It would be interesting to discover whether the red swan of the American Indian tradition, supposed to represent the setting sun, as given by Longfellow in his song of "*Hiawatha*", is really a swan or the red goose of the Nile, and thus another link between the old world and the new.

III.—Saraswati, the consort of Brahma, is sometimes seen mounted on a PEACOCK, which bird, next to the goose, plays a conspicuous part in Eastern tradition. The peacock is the emblem in India of Kartika, the Indian Mars, the second son of Brahma and Saraswati, of whom a legend is related that "he sprang from the central eye of Siva, to destroy the giant Souraparna, whom he cut in two, and the severed monster assumed the shape of a peacock and a cock, the former of which the victor determined to use as a vehicle and the latter to be borne in his standard."* The connection between the peacock and the goose is alluded to in a jataka still found in Ceylon, which is given by Fergusson in his "*Tree and Serpent Worship*." The royal Hansa assembled all his subjects in an extensive plain, that his daughter might choose a husband from among them. She chose the peacock, at which the vain bird was so elated that he raised his tail and made such a display as to disgust the king, who, in consequence, broke off the match. Pocock says, "*The peacock*," according to Colonel Tod, "was a favourite armorial emblem of the Rajpoot warrior; it is the bird sacred to

* Moor's "*Hindu Pantheon*."

their Mars (Kumara), as it was to Juno, his mother, in the West."* The peacock plume is still a warlike badge in China and Japan, and fans of peacock feathers are carried before Eastern monarchs, as they are also before the Pope. The fact of Hera or Juno having both the goose and the peacock assigned to her, serves not only to denote her Eastern and pre-Aryan origin, but also to identify her with Saraswati or Brahmi, the sacti or consort of Brahma, whose attributes in the Greek and Roman mythologies seem to have been divided between Juno and Minerva. Argus the hundred-eyed, Juno's watchful messenger, whose eyes she transferred to the peacock, bears a strong affinity to the Indian Indra, the watchful guardian of the heavens, the regent of the winds, who is always represented as covered with eyes; and it must be noted that Juno had evidently some connection with atmospheric phenomena, the rainbow being her constant attendant.

IV.—It is strange that the bird assigned to Minerva should have been the OWL, which all over the world is deemed a bird of ill-omen; so much so, that in India, at the present day, if an owl alights on the hut of a native, it is burnt or pulled down as polluted. In the Indian zodiac, the headless Rahu, representing the Dragon's tail, is seated on a brown owl. We read in the Universal History, that "The Arabs held the owl in great abhorrence, as imagining that it always brought ill news and portended something bad;" but there is an owl tribe among the Konds of India, and it is frequently represented in Egyptian hieroglyphics although it does not appear to have been among the sacred animals. In Prescott's "Mexico", we read, "The Mexicans, according to Clavigero, believed in an evil spirit, the enemy of the human race, whose barbarous name signified 'rational owl,' and the curate Bernaldez speaks of the devil being embroidered on the dresses of the Indians of Columbus in the likeness of an owl;" but among the Mexican antiquities I find no representation of this bird, unless a bird resembling the cuckoo be intended for it. "The owl was regarded by Aztecs, Quichés, Mayas, Peruvians, Araucanians, and Algonquins, as sacred to the lord of the dead, and was one of the names of the Mexican Pluto, whose realm was in the north. As the bird of night, it was a fit emissary of him who rules the darkness of the grave."† At first it seemed to me probable that Minerva's bird was originally the cuckoo, which we find constantly associated with divination and augury, and which is one of the birds assigned to Juno; and this I imagined from the fact that to Athena or Minerva is assigned the instruction of mankind in

* Pococke's "India in Greece."

† Brinton's "Myths of the New World."

the useful arts, particularly agriculture, and if my theory of the origin of the use of metals be correct, then the serpent, being one of her emblems, would connect her with the primitive serpentine race of metal-workers; and we are told that even now, in some parts of Germany, the call of the cuckoo is thought to disclose mines, and certain plants, the cuckoo-bread and cuckoo-flower, are believed to grow in most luxuriance where the depths of the earth are rich in metal.* But Dr. Schliemann's recent discoveries of owl-headed divinities on the supposed site of ancient Troy, would serve to show that Minerva's bird was really the owl, as connected with the rising sun; or rather, perhaps, that she was the chief divinity of an ancient owl-tribe, and was thus represented in these ancient sculptures with the form of her totem. Brinton suggests that the owl obtained a character for wisdom, because she works while others sleep.

V.—One of the most celebrated mythological birds of Eastern origin was the PHŒNIX, which Philostratus says came from India to Egypt, adding that the phœnix, when about to burn himself, sings a dying hymn, which recalls to us the fable of the death song of the swan, which is associated with the phœnix in some traditions.† Traces of the phœnix are found in China, where it is called Fong-Hoang, the bird of prosperity, and the forerunner of the golden age;‡ but it was in Egypt that the legend obtained its greatest celebrity, it is thus given by the Rev. J. H. Ingram in the "Pillar of Fire:" "The phœnix, of which there is but one in the world, comes flying from the East once in 651 years, many other birds bearing it company. It reaches Heliopolis, the city of the sun, about the time of the vernal equinox, where it burns itself upon the roof of the temple, in the fire of the concentrated rays of the sun as they are reflected from the golden shield thereon with consuming radiance. No sooner is it consumed to ashes, than an egg appears in the funeral pyre, which the heat which consumed the parent warms instantly into life, and out of it the same phœnix comes forth in full plumage, and flying away, returns no more till 651 years have expired. This myth is supposed to relate to the transit of the planet Mercury, which once in 651 years enters the flames of the sun on nearly the same day of the year."§ There can be no doubt that some astronomical fact was veiled beneath the allegorical phœnix, but it would seem to me rather to symbolise the belief of early astronomers in the

* "Quarterly Review," July 1863; article, *Sacred Trees and Flowers*.

† Creuzer's "Religions de l'Antiquité."

‡ Du Halde's "China."

§ The period assigned to the Phœnix varies from 800 to 1,461 years, according to different authors.

destruction by fire and new creation of the world after certain lengthened periods. Rawlinson, in his edition of "Herodotus," tells us that the "Benno,* or bird of Osiris, was the true phoenix, and represented the pure soul of the king."

VI.—But probably the most sacred of all the birds of Egypt was the HAWK or osprey, the emblem of Ra, the sun, who is often represented as a man with the head of a hawk, surmounted by a globe or disk of the sun, from which the Uraeus or sacred asp issues.† Kneph, the great god of the Egyptians, is represented as a serpent with the head of a hawk. Porphyry says, "The hawk was dedicated to the sun, being the symbol of light and spirit, because of the quickness of its motion and its ascent to the higher regions of the air"; and the Universal History tells us that "The hawk was deified because one of those birds in ancient times brought a book to the priests of Thebes, tied round with a scarlet thread, containing the rites and ceremonies which were to be observed in the worship of the gods; for which reason the sacred scribes wore a scarlet fillet with a hawk's feather on their heads." It is singular to find this story reproduced in an Indian fable, in which the eagle of Krishna (who is an incarnation of Vishnu) pursues the serpent (Buddha) and recovers the books of science and religion with which he had fled. Upon which Pococke observes, "Did Buddha or Mercury come from or escape to the Nile? Is he the Hermes of Egypt, to whom the four books of science, the Vedas of the Hindoos were sacred?"‡ It must be remembered that the first Avatar or incarnation of Vishnu in the form of a fish was in order to recover the sacred books from the ocean, the emblem of Vishnu being the man-eagle Garuda, probably originally the hawk or Brahmany kite. In Persia we find the hawk used as emblematic of Ormuzd; and it is very remarkable to find the hawk in connection with the primogenial egg, and the serpent showing itself in the traditions of Fiji, where, we are told, "Their account of the creation is that a small kind of hawk built its nest near the dwelling of Ndengei (their serpent god), and when it had laid two eggs the god was so pleased with their appearance that he resolved to hatch them himself, and in due

* This Benno was a species of ibis or stork, and here we probably get a clue to the confusion existing between the hansa or goose, the swan and the ibis. It has been seen that the goose was sacred to Seb, the father of Osiris; hieroglyphically it denoted a son, and it would seem natural that the son should assume the father's totem; but probably from the superior usefulness of the ibis in Egypt, it would in time supersede the goose and become identified or confounded with the older emblem.

† Wilkinson's "Ancient Egyptians."

‡ Pococke's "India in Greece," p. 188.

time were produced two human infants, a boy and a girl.* A legend of the Quiché's attributes the creation to the bird-serpent, and the picture writings of the Mixtecs preserved a similar cosmogony. Two winds, called the nine serpents and the nine caverns, are represented as a bird and a winged serpent."† It was probably the figure of the hawk or vulture, as sacred to the sun, which was one of the marks made or found on the bull Apis.

VII.—As the hawk was the emblem of Ra, the male sun, and of Amun-ra, who appears in Egyptian mythology as the king and father of the gods, so the VULTURE became the emblem of the female divinities connected with the sun, probably because it was supposed that vultures were all females. Thus the vulture was the emblem of Maut, the mother of all, and of Neith, the Egyptian Minerva, and it was worn as a head-dress by queens, even as a similar bird is still worn by ladies of rank in China. The vulture appears very frequently in Egyptian hieroglyphics, and among the objects found in a tumulus in the neighbourhood of Astrabad, the ancient Hyrcania, in Parthia, was a gold lamp with a long spout, evidently designed for religious rites, and weighing seventy ounces, on which is depicted the vulture of the Caucasus, employed, doubtless, as a sacred symbol.‡ The vulture was one of the chief birds of augury among the Etruscans, and thence held a similar rank in Rome, and every one will remember the trial of the rival pretensions of Romulus and Remus by the flight of vultures; Remus first observed six vultures and claimed the augury, but immediately afterwards Romulus saw twelve, which his partisans declared to be decisive of victory. A college of augurs also existed in Mexico.

VIII.—One of the most widely distributed of mythological birds is the cock. In India it is dedicated to Parvati, the consort of Siva, now worshipped as the sanguinary Durga.¶ In Egypt it was one of the symbols of Osiris, and we are told that it was esteemed by the ancients as the emblem of valour and of love; and upon the shield of Idomeneus, dedicated to Jupiter, near the great temple of Agrigentum, the cock appears as the symbol of the sun. In Greece and Rome it was sacred to Mars, to Apollo, and to Esculapius, and was the national emblem of the Celts, as it still is of the French; but we are surprised to find it occupying a prominent place among the sculptures of

* William's "Fiji and the Fijians."

† Brinton's "Myths of the New World."

‡ "Archæologia," vol. xxx.

¶ Moor's "Hindu Pantheon."

Mexico.* In Etruria it appears to have had a sepulchral signification, for we find it adorning many of the urns, where it is supposed to denote prosperity to the dead.† In Leslie's "Early Races of Scotland" we are told that the cock was the usual sacrifice offered to the sun. In Scotland, burying a live cock is described as a remedy for insanity, and even in late years the same remedy has been resorted to for epilepsy, and witches were accused of sacrificing cocks. They are still sacrificed in India when cholera or small-pox is raging; and when a man is dying, the Parsees bring in a dog and a cock to sacrifice, the cock to receive the good spirit and the dog the bad.

In Sale's introduction to the Koran, he states "That the idolatry of the Arabs as Sabeans, previous to Mahomet, chiefly consisted in worshipping the fixed stars and planets, also that at their various places of pilgrimage they sacrificed a cock. Layard describes a gem found at Babylon, on which was engraved a winged priest or deity standing in an attitude of prayer before a cock on an altar, and above the group a crescent moon, adding that the Hebrew commentators conjecture that Nergal, the idol of the men of Cuth, had the form of a cock. He also describes an idol of the Yezidis called the Melek Taous, which is a rude figure of a bird like a cock on a stand of copper or brass.‡

IX. When we come to consider the DOVE as a sacred bird, we shall see that it originated with, and is chiefly confined to, Semitic races, and always has some reference to Venus. We are told that neither doves nor pigeons were sacred in Egypt, nor do we find them depicted upon the rude stone monuments of early date, nor among the Mexican sculptures. There is one Indian legend connected with the dove, but whether of late or early date I know not. It is thus given in Moor's "Hindu Pantheon": "Agni arriving in the presence of Siva, and assuming the form of a dove, received from him the germ of Carticeya (Mars), but, unable to retain it, let it fall into the Ganges, on the banks of which river arose a boy, beautiful as the moon and bright as the sun, who was called the son of Agni (Fire)." The dove appears frequently in Etruscan tombs, and Dennis says: "It is supposed, not without reason, that the souls of the deceased are sometimes symbolised on the monuments as birds, especially doves." That doves were emblems of divinities in oriental mythology is well known; Mithras, the great deity of the Persians, was so symbolised. In Arabia we are told that among the idols of the Caaba there was a wooden pigeon, as likewise another above, to

* Le Noir's "Mexican Antiquities."

† Dennis's "Cities and Cemeteries of Etruria."

‡ Layard's "Nineveh."

destroy which Mohammed lifted Ali upon his shoulder.* But the fable of the dove seems to have originated in Syria, where it was connected with the birth of Astarte or Aphrodite, hence called *Dea Syria*.†

Of Semiramis the legend says that she was the daughter of the fish goddess, Derceto, who, being exposed by her mother, was miraculously preserved by doves, and, after a long and glorious reign over Babylon, disappeared from the earth, taking her flight to heaven in the form of a dove. In this fable we see the connection between the soul and the bird, which is common to so many races, and also the birth of the Goddess of Beauty from water, which is related of the Greek Aphrodite, the Roman Venus, the Syrian Astarte, and is traceable in India, where Rhemba, of Indra's court, who seems to correspond with the popular Venus, the Goddess of Beauty, was produced, according to the Indian fabulists, from the froth of the churned ocean. The connection between this goddess and her doves with the mundane egg is very remarkable. In India this egg is produced by Brahma, whose emblem is the goose or swan; in Syria it is transferred to the dove.

In the Chinese legends the earth egg floats hither and thither upon the waves until it grows to a continent. In the Finnish epic of Kalewala the eagle floated over the waves and hatched the land. In Scandinavia the earth is formed from the flesh of the giant Ymer, and set to float like a speck on the vast sea between Mispel and Niflheim. But wherever these legends of the mundane egg are found, they may be traced to that old Turanian cosmogony which makes the world resemble an egg in form, having its origin in the water. Eggs were formerly suspended in many temples, and we are told they are still so suspended in mosques, and both ostrich and hen's eggs are found in the tombs of Etruria, sometimes painted or carved and sometimes imitated in pottery,‡ and thus a veneration for eggs may be traced downwards from the early Turanian races, among whom they were revered as the source and origin of all things, to our own Easter eggs, typical of Christ and the resurrection.

X. It is when we come to consider the EAGLE, the king of birds, that we find ourselves gradually emerging from the dark night of mythology. We have seen the hawk or osprey revered in Egypt as the emblem of Osiris and other gods in their character as sun deities, we have seen the same bird in distant Fiji producing the primogenial egg, and we find it in India as the emblem of Vishnu, the preserver. It is in this latter country that we can

* "Universal History," vol. xxviii.

† "Encyclopædia Britannica," *sub voc.* Mythology.

‡ "Cities and Cemeteries of Etruria." Dennis.

trace most clearly the process whereby the hawk, revered by Turanian races, became converted into the eagle, the chosen type of the Aryans in all countries. The garuda, or eagle of Vishnu, evidently remounts to the age of totemism. It is represented both in sculptures and paintings as a man with hooked nose and eagle's wings and talons; even when he bears Vishnu on his shoulders he is still only a winged man. "In the Elephanta cave, Vishnu is represented as seated on, or bestriding Garuda's shoulders, with his legs in front, Garuda holding him on by the ankles, and Garuda is represented as a winged man, with a wig, hooked nose, and eagle's claws."* It was the part of Vishnu and his consort, Laksmi, to preserve the mundane egg, formed by Brahma, from destruction, when cut in half by Siva, the destroyer. There can be little doubt that these three famous Indian gods are subdivisions of one primary god of nature. They and their consorts are all fabled to have been children of the Indian Isis, or Nature personified, and their connection with the great mundane egg points to a very early pre-Aryan origin. It is easy to imagine that the Aryans, coming from a northern land where eagles abounded, would soon convert the hawk, osprey, or Brahmany kite revered by the natives, into the more familiar and superior bird of their native rocks, and thus we find that the vehicle of Krishna, a later incarnation of Vishnu, is no longer the Garuda, the totemic divinity, part man, part hawk or eagle, and perhaps part phoenix, but has become a genuine eagle. In his form as Garuda he is known as Nag-anteka, the destroyer of serpents; and this legendary antipathy of the eagle to serpents occurs in many other countries, as in Scandinavia, where the squirrel causes strife between the serpent which gnaws the root of yggdrasil, and the eagle which sits in the branches. The same character is assigned to the eagle in Mexico, where that bird holding a serpent in its beak forms the modern standard.

Now, even accepting Prescott's date(1326) for the foundation of modern Mexico, it is abundantly evident that two or more civilised races occupied the country at a much earlier date. We read of the Mayas, who came from the Antilles when the country was peopled by the Quinamies, to whom the Cyclopean erections still extant are attributed. They were overthrown by Votan B.C. 800. To the Mayas succeeded the Aztecs and the Toltecs. According to existing monuments, one of these races bore a striking resemblance to the Egyptians, both in feature and dress, and doubtless also in religion, the serpent being a very prominent object in their sculptures. The other race is very distinct in feature and dress, the extreme prominence of the nose giving them almost a Jewish appearance, but in all probability they belonged to the Caucasian race and bore some affinity to the hook-

* *Idie Moor's* "Hindu Pantheon."

nosed Garuda, the destroyer of serpents of Indian sculptures, and, in whatever way they got to Mexico, they very evidently carried with them the legend of the serpent-destroying eagle. We find this same widely-spread myth in Greece and Rome, where Zeus or Jupiter, whose special emblem was the eagle, wars with and overcomes the Titans, who were serpentine divinities, represented as such, by their lower extremities terminating in serpents' tails. It existed also in Egypt, but there it is represented by the hawk-headed Horus piercing the gigantic serpent, Apophis. It appears to me that, tracing this myth in all countries, it represents the conquest of aboriginal or long-established tribes by superior and generally Aryan races. The serpent was the undoubted emblem of a Turanian people, and it was adopted everywhere to symbolise the natives, the sons of the soil, aborigines, as they might well have been deemed by the conquering race, although perhaps in many cases they too were settlers, the pioneers of that Turanian civilisation which would appear from all existing traditions and monuments to have been carried by larger or smaller bodies of emigrants, from Central Asia over a great part of the world, introducing wherever they went sun-worship, commingled with that of deceased ancestors, the egg and serpent cosmogony, a knowledge of the rudiments of metallurgy, astronomy, cyclopean architecture, and the construction of mounds and tumuli, developing later into the pyramid.

Perhaps a more careful and elaborate inquiry into these matters will enable us in time to affix some approximate date to those early migrations which undoubtedly took place in prehistoric times, and the countries from which those migrations emanated; but it appears to me that language would here be a very fallacious guide, for supposing, as is most probable, a small band of men, carried unintentionally by some ocean current to a foreign shore; they might indeed have been received by the rude savages among whom they were cast as gods in human form, and have succeeded in imparting to them their superior civilisation; but they could never have imposed upon them their language. On the contrary, they would themselves adopt the language of the multitude, and, being few in number, would in time become so amalgamated with the natives, as to leave behind them only a tradition, and those indestructible records of their connection with the old Asiatic world to be found in monuments, legends, and peculiar customs; and these unintentional migrations may have occurred many times in the world's history, at different epochs and from various points, which would account for the variations observable in the civilisation of Peru and Mexico, and other American countries which, having had apparently no communication with each other, yet present, in the midst of remarkable differences, certain peculiar points of re-

semblance. A glance at a map of ocean currents will show that a frail vessel from the coasts of Asia, drawn into some of these, would be carried by them to the American shore just at those points where the most decided traces of Asiatic civilisation are to be found. Undoubtedly one of the many clues to this inquiry will be found in the range of certain mythological birds, which, as I have endeavoured to point out, are peculiarly adopted by certain races. Wherever we find serpent traditions, and with them the egg as the origin of the world or of the primeval pair, there we generally find the goose, the swan, or the hawk, revered as the emblem of the principal divinity, and this goose or hawk is often confounded or identified with the phoenix, which appears to combine in itself the form and plumage of the hawk, the goose, and the peacock, all pre-eminently Turanian birds; and, although we find the egg sacred also in Semitic Assyria in connection with the dove, it is never supposed to have been laid by that bird, nor does it appear in connection with the serpent or the formation of the world; but it is a large egg falling from heaven, hatched by doves, and from it proceeds, not the world, or the first man and woman, but Astarte or Venus, the Goddess of Beauty, and this change in the character of the egg would appear to me to be owing to the engrafting of later Semitic beliefs upon the old Turanian cosmogony which once flourished in Chaldea. Whether the eagle-headed divinity so prominent in Assyrian sculptures was also originally the Turanian hawk, the peculiar emblem of the sun-god in Egypt and elsewhere, or whether it was the germ from which sprang the Aryan eagle, it is difficult to determine; but I should be inclined to think it was at first the hawk, modified later under Aryan influences into the eagle, as was the case with Garuda in India. In Persia the dove was the emblem of Mithras, the sun-god, but we find that the eagle was the royal bird, emblematic of Ormuzd, and we are told by Creuzer, that the chief of the eunuchs always endeavoured to give to the nose of the prince royal, the form of an eagle's beak, in honour of Cyrus, whose nose was of that shape.

In noticing the eagle as pre-eminently the bird of the Aryans, two or three marked peculiarities in his history must be borne in mind. First, he is always the emblem of the younger, but more potent divinities, who have conquered or superseded the older gods; thus he is the emblem of Krishna in India—a late incarnation of Vishnu; and even as Garuda, the vehicle of Vishnu, is called the younger brother of Arun, the charioteer of Indra, the old nature god of the aborigines, and although he is fabled to have sprung from the egg of Diti, the wife of the Indian Casyapa or Uranus, it was only after the lapse of five

hundred years, when he destroys the serpents, and seizes the water of life.

In Greece and Rome he is the favourite emblem of Zeus and Jupiter, those younger divinities who overcame Chronos and Saturn, and reigned in their stead; but there he never has any connection with the great mundane egg. If this egg appears at all in Grecian and Roman mythology, it is apparently only as a survival of older beliefs, and is always associated, not with the eagle, but with the swan—the Aryan form, as I believe, of the old Turanian goose. But the great and peculiar characteristic of this bird is his strongly marked antagonism to the serpent, denoted in India by his name—*nag-antika*, snake destroyer—an antagonism which I believe to symbolise an antagonism of race, and to denote the conquest of the old Turanian serpent worshippers by the aggressive Aryans.

With regard to the phoenix, that enigma of the ancient world, Mr. Tylor gives a Chinese legend, which seems to point to the origin of this myth. "A great sage went to walk beyond the bounds of the moon and the sun; he saw a tree, and on the tree a bird, which pecked at it and made fire come forth; the sage was struck with this, took a branch and produced fire from it."*

The sculptures of Nineveh and Babylon, representing the eagle Nisrock perched on the sacred tree or cross, have possibly some reference to the Chinese myth, and we are told in Baring Gould's "*Myths of the Middle Ages*," that in the depths of the forests of Central America, in a palace founded, according to tradition, in the ninth century B.C., there is a sculptured cross, surrounded with rich feather-work and ornamental chains, and above the cross a bird of peculiar character, perched as we see the eagle, Nisrock, on the cross.*

In the Athapascan myth, a raven saved their ancestors from the general flood, and this is identified with the great thunder-bird, who brought, in the beginning, the earth from the depths. Prometheus like, it brought fire from heaven, and saved them from a second death by cold. Precisely the same benefits were attributed by the Natchez to the small red cardinal bird.†

Now the phoenix is undoubtedly the true fire-bird. Flying from the East, he goes to immolate himself by fire in the Temple of the Sun, at Heliopolis, and out of his ashes comes an egg, from which proceeds a worm, which rapidly develops into a young phoenix in full feather, who flies away eastward, to return again after five or six hundred years, and himself perish in the same manner by fire. Another version tells us of the newly born phoenix taking a ball of myrrh of the weight of his father's

* Tylor's "*Early History of Mankind*."

† Brinton's "*Myths of the New World*."

body, hollowing it out, and enclosing the dead body therein, and then flying with this egg of myrrh to Heliopolis, there to consume it by fire. Now the remarkable thing in this legend is that it seems to combine in itself the germs of all the religions which prevailed in the pre-Aryan world. We see in it, sun-worship and sacrifice by fire to that great deity. We see in it the egg and the worm or serpent, both so highly revered everywhere in the ancient world, and we may also trace in it that reverence for ancestors so characteristic of Turanian races, shown by the care with which the young phoenix embalms his father's body in myrrh, and conveys it to the Temple of the Sun. It seems to me, that to this myth may be traced the form of the Assyrian Nisrock, with the eagle's head and the fir cone in his hand, indicative of the myrrh egg of the phoenix; and it is not improbable that it may have originated the form of the Garuda of Vishnu, who is represented as half-man, half-bird, sometimes with a red comb and beak, his robe red, his face, arms, and pinions green; the feathers of his wings and tail green and blue, and he is sometimes represented spread and double-headed like the Prussian eagle,* and it may also have had some connection with the old Mexican deity, Quetzalcoatl, whose name we are told signifies green-feathered serpent, and who is often represented as a man with green plumes and tail like a bird, having also some affinity to the humming bird, perhaps because the brilliancy of the plumage of this little winged gem would recall the fabled glories of the eastern phoenix. It is certain that among Egyptian sculptures the phoenix is sometimes represented as a winged man, with a tuft of feathers on his head.

"It was probably," says Brinton, "the eagle which was worshipped in Upper California, under the name of Panes." "But," he adds, "Father Geronimo Boscana describes it as a species of vulture, and relates that one of them was immolated yearly with solemn ceremony in the temple of each village. Not a drop of blood was spilled, and the body was burned; yet the natives maintained and believed that it was the same individual bird they sacrificed each year; more than this, that the same bird was slain by each of the villages."† Have we not here also a repetition of the phoenix legend of the east?

It would appear that among Aryan nations the cock was in some sense the successor of the phoenix, the representative of the sun-gods of Greece and Rome, and probably also, later, of Quetzalcoatl in Mexico, where we find it frequently represented on the monuments; but whether these are of early or late date,

* Moor's "Hindu Pantheon."

† Brinton's "Myths of the New World."

I must leave others to judge. Quetzalcoatl was undoubtedly an early god, adopted by later races into their mythology, as was Jupiter in Rome; and it is remarkable, that as the eagle was the messenger of Jupiter, so in Mexico it was the eagle which conveyed to Quetzalcoatl the mode of his father's death.

It seems natural that a bird should be chosen as the representative of aerial phenomena; but when we find it in many far distant countries, associated with the introduction of fire, we are tempted to the belief that in some manner these countries have received an ancient myth from some common source, and that that myth bore reference to the early discovery of fire, perhaps, as suggested in the Chinese legend, from sparks produced by the beak of a bird striking some very dry tree, and this bird may possibly have been one of the brilliantly coloured woodpeckers, afterwards transformed by fancy into the gorgeous phoenix, and changed according to the country to which the myth was borne, into the goose, the cardinal bird, the raven, the eagle, and various others, all, however varied in form, yet bearing about them some traces of the original phoenix in their relation to the sun, or sun-god with his lightning and dark thunderbolts, and always so accompanied by other myths and traces of a peculiar civilisation of Turanian character, as to render it almost a certainty that at some remote period there must have been some admixture of the aborigines with Asiatic peoples of Turanian origin.

The President, in stating that this was the last ordinary meeting of the session, announced that the appeal made to the members last January, to free the Institute from debt, had been completely successful, and that the treasurer, after paying all accounts, would have a small balance in hand.

The President also announced that a Special Meeting of the members and their friends would be held on Wednesday, July 1st, at the Bethnal Green Museum.

The meeting then separated.

JULY 1st, 1874.

SPECIAL MEETING

HELD AT THE BETHNAL GREEN MUSEUM.

Professor BUSK, F.R.S., President, *in the Chair.*

The Minutes of the previous meeting were read and confirmed.

The election of JOHN CUNNINGTON, Esq., 68, Oakley Square, was announced.

The following paper was read by the author :

On the PRINCIPLES of CLASSIFICATION adopted in the ARRANGEMENT of his ANTHROPOLOGICAL COLLECTION, now exhibited in the Bethnal Green Museum. By Col. A. LANE FOX. Read at the Special Meeting of the Institute held at the Bethnal Green Museum on the 1st July, 1874, on the occasion of the opening of the Collection to the public.

I GLADLY avail myself of the opportunity that has been afforded me of explaining the principles of classification that I have adopted in the arrangement of my collection, in the hopes that, by offering them to the consideration of anthropologists, their soundness may be put to the test, and that they may elicit criticism on the part of those who have devoted their attention to the subject of primitive culture.

The collection is divided into four parts. The first has reference to physical anthropology, and consists of a small collection of typical skulls and hair of races. This part of the collection, as it relates to a subject that has received a large amount of attention from anthropologists, and has been frequently treated by abler hands than mine, I do not propose to enter into. The remainder of the collection is devoted to objects illustrating the development of prehistoric and savage culture, and consists of—Part II. The weapons of existing savages. Part III. Miscellaneous arts of modern savages, including pottery and substitutes for pottery; modes of navigation, clothing, textile fabrics and weaving; personal ornament; realistic art; conventionalised art; ornamentation; tools; household furniture; musical instruments; idols and religious emblems; specimens of the written character of races; horse furniture; money and substitutes for money; fire-arms; sundry smaller classes of objects, such as mirrors, spoons, combs, games, and a collection of implements of modern savages, arranged to illustrate the mode of hafting stone implements. Part IV refers to the prehistoric series, and consists of specimens of natural forms simulating artificial forms, for comparison with artificial forms; a collection of modern forgeries for comparison with genuine prehistoric implements; palæolithic implements; neolithic implements; implements of bronze, iron, and bone.

The collection does not contain any considerable number of unique specimens, and has been collected during upwards of twenty years, not for the purpose of surprising any one, either by the beauty or value of the objects exhibited, but solely with a

view to instruction. For this purpose ordinary and typical specimens, rather than rare objects, have been selected and arranged in sequence, so as to trace, as far as practicable, the succession of ideas by which the minds of men in a primitive condition of culture have progressed from the simple to the complex, and from the homogeneous to the heterogeneous.

Many ethnological museums exist in this country and elsewhere, and therefore, in claiming to have accomplished a useful purpose in forming this collection, I am bound to endeavour to show that it performs some function that is not performed by the majority of the other museums that are to be found. I propose, therefore, to consider, in the first place, what the defect of an ethnological museum usually is.

The classification of natural history specimens has long been a recognised necessity in the arrangement of every museum which professes to impart useful information, but ethnological specimens have not generally been thought capable of anything more than a geographical arrangement. This arises mainly from sociology not having until recently been recognised as a science, if indeed it can be said to be so regarded by the public generally at the present time. Travellers, as a rule, have not yet embraced the idea, and consequently the specimens in our museums, not having been systematically collected, cannot be scientifically arranged. They consist of miscellaneous objects brought home as reminiscences of travel, or of such as have been most easily procured by sailors at the seaports. Unlike natural history specimens, which have for years past been selected with a view to variety, affinity, and sequence, these ethnological *curiosities*, as they have been termed, have been chosen without any regard to their history or psychology, and, although they would be none the less valuable for having been collected without influence from the bias of preconceived theories, yet, not being supposed capable of any scientific interpretation, they have not been obtained in sufficient number or variety to render classification possible.

This does not apply with the same force to collections of prehistoric objects, which during the last ten or fifteen years have received better treatment. It is to the arts and implements of modern savages that my remarks chiefly relate.

Since the year 1852 I have endeavoured to supply this want by selecting from amongst the commoner class of objects which have been brought to this country those which appeared to show connection of form. Whenever missing links have been found they have been added to the collection, and the result has been to establish, however imperfectly, sequence in several series.

The primary arrangement has been by form—that is to say,

that the spears, bows, clubs, and other objects above mentioned, have each been placed by themselves in distinct classes. Within each there is a sub-class for special localities, and in each of these sub-classes, or wherever a connection of ideas can be traced, the specimens have been arranged according to their affinities, the simpler on the left and the successive improvements in line to the right of them. This arrangement has been varied to suit the form of the room, or of the screens, or the number of specimens, but in all cases the object kept in view has been, as far as possible, to trace the succession of ideas.

This is the distinctive difference between my collection and most others which I have seen, in which the primary arrangement has been geographical, that is to say, all the arts of the same tribe or nation have been placed together in one class, and within this, there may perhaps have been in some cases a sub-class for special arts or special forms. Both systems have their advantages and disadvantages. By a geographical or racial arrangement the general culture of each distinct race is made the prominent feature of the collection, and it is therefore more strictly *ethnological*, whereas in the arrangement which I have adopted, the development of specific ideas and their transmission from one people to another, or from one locality to another, is made more apparent, and it is therefore of greater *sociological* value. Different points of interest are brought to light by each, and, in my judgment, a great National Anthropological Collection, should we ever possess such a desideratum, can never be considered complete until it embraces two series, arranged upon these two distinct systems.

Following the orthodox scientific principle of reasoning from the known to the unknown, I have commenced my descriptive catalogue with the specimens of the arts of existing savages, and have employed them, as far as possible, to illustrate the relics of primeval men, none of which, except those constructed of the more imperishable materials, such as flint and stone, have survived to our time. All the implements of primeval man that were of decomposable materials have disappeared, and can be replaced only in imagination by studying those of his nearest congener, the modern savage.

This being the system adopted, one of the first points to which I desire to invite your attention is the question, to what extent the modern savage truly represents primeval man, or rather to what extent may we take the arts of modern savages to represent those of the first progenitors of our species?

In order to do this it is necessary to view the question in its psychological aspects. This, I shall touch upon as lightly as possible, avoiding all technicalities, which in a cursory view of the

matter, might tend to confuse, and confining myself to those parts of the subject which appear to have a direct bearing on evolution.

It is a matter of common observation that animals act by instinct, that is to say, that in the construction of their habitations and other arrangements for providing for their wants, they act intuitively, and apparently without the intervention of reason; and that the things which they construct, though often of a more or less complex character, are usually of a fixed type; that they are repeated by nearly all animals of the same kind with but little variety; and that within the limited space of time during which we are able to observe them, they do not appear to be susceptible of progress, although evidence has been adduced to show that animals, even in a wild state, do change their habits to a certain extent with the change of external conditions.

On the other hand, we recognise in many animals the operation of a reasoning mind. In their efforts to escape, or when conditions of a novel character are presented to them, they act in a manner that shows clear evidence of intelligence, although they show this to a very limited extent as compared with man. We also know that habits acquired by animals during domestication, or taught them by the exercise of their reasoning faculties, become instinctive in them, and are inherited in their offspring, as in the familiar case of the pointer dog. We also know that under domestication animals lose the instincts acquired in a wild state.

In the human mind we recognise the presence of all these phenomena, only in a different degree. We are conscious of an intellectual mind capable of reasoning upon unfamiliar occurrences, and of an automaton mind capable of acting intuitively in certain matters without effort of the will or consciousness. And we know that habits acquired by the exercise of conscious reason, by constant habit, become automatic, and then they no longer require the exercise of conscious reason to direct the actions, as they did at first; as, for example, the habit of walking upright, which the child learns with pain and labour, but in time performs without conscious effort of the mind. Or the habit of reading and writing, the learning of which requires a strong and continuous effort of the intellect, but which in time becomes so completely automatic that it becomes possible to read a whole page aloud whilst the intellectual mind is conscious of being engaged in other things.

We perceive clearly that this automatic action of the brain is dependent on frequent repetition by the intellectual brain, as in the familiar case of learning by heart; and also that the transfer of the action from the intellectual to the automaton brain—if in-

deed there are separate portions of the brain allotted to these separate functions, as appears probable—is a gradual and not a sudden process, and that there are intermediate stages in which an action may be performed partly by direction of the intellect and partly automatically. This is shown in the case of a person who, wishing to make an effective speech at a public meeting, reasons out his address carefully, and then learns it partially by heart. When the time comes to address the assembly, the speech, having been partly referred to the automaton brain, the intellect is relieved from action, and, being unoccupied, is apt to wander and engage itself in other matters that are passing at the time; but the automaton brain, being insufficiently prepared to bear the whole responsibility, is unable to continue, and the intellectual brain, having already started on a journey elsewhere, is unable to return quick enough to take up the thread of the discourse. The result is that the would-be orator breaks down pitifully in the middle of his speech, owing to his having learnt his lesson too well for one function of his mind, and not well enough for the other. The same is seen in many business transactions, which, from frequent repetition, become what is called a second nature, and in the conduct of which the conscious intellect is partly freed from the control of the actions.

We see also that both automatic and intellectual activity are inherited in different degrees by different persons. Thus it is a matter of common observation that there are some persons who are able to acquire with great facility the power of conversing upon simple subjects in many different languages, whilst upon more complex subjects, requiring intellectual effort, they never acquire the power of conversing in any language. Thus, also, it is frequently seen that some children show a remarkable aptitude for learning in their youth. It is said to be a pleasure to educate them; everything speedily becomes automatic in them; great hopes are entertained of their future prospects; but they frequently become a grievous disappointment to their parents, who have built castles in the air upon the strength of their apparent precocity, whereas an acute observer might have seen that they had never from the first shown signs of great intellectual capacity. On the other hand, we hear of dunces who are the despair of their tutors, who can with difficulty be taught to read and write and spell, but in after years become philosophers and scientists, all which might have been foretold from the first if the system of education had been such as to call forth the intellectual powers.

It is not merely that some inherit automatic capacity whilst in others the capacity is intellectual. There is, without doubt, in both cases an hereditary capacity for special things. Thus, whilst

some acquire a knowledge of music with facility, others can never be made to appreciate a note of music, and so with respect to other arts.

How then are we to account for this innate difference in the capacity of individuals, unless by supposing it to be proportioned to the length of time during which, or the degree of intensity with which, the ancestors of the individuals have had their minds occupied in the particular branch of culture for which capacity is shown. Unfortunately the difficulty of tracing the channel of hereditary transmission stands in the way of obtaining any certainty on this point, although the labours of our Vice-President, Mr. Galton, have already thrown much light on this interesting subject. But on this assumption, it is easy to account for the more perfect action of instinct in the lower animals than in men, when it is considered that the minds of their progenitors must have been confined to the experience of those particular things for which instinct is shown, far longer than is the case with man; and this brings us to the point which has an important bearing upon the question before us, viz.; that every action which is now performed by instinct, has at some former period in the history of the species been the result of conscious experience.

But, in adopting this theory, it is not necessary to assume that the ideas themselves have been communicated by hereditary transmission. The doctrine of innate ideas, exploded by Locke, I believe, can never again establish itself. What is inherited is no doubt a certain organisation of the nervous system, which, by repeated use through many generations, aided by natural selection, has become exquisitely adapted to the recognition of experience of a particular kind, and which, by the constant renovation that is going on within the body, has grown in harmony with those experiences, so that, when the spring is touched, as it were, the machinery is at once set in motion; but, until the necessary external conditions are presented to the mind, there can be no consciousness of them in the mind. The mind creates nothing apart from experience; its function is limited to building with the materials presented to it through the medium of the senses. The broader the basis of experience, the more lofty the superstructure that can be raised upon it. Or, to use the words of Mr. Herbert Spencer,* "the supposition that the inner cohesions are adjusted to the outer persistences by accumulated experience of those outer persistencies, is in harmony with all our actual knowledge of mental phenomena. Though, in so far as reflex actions and instincts are concerned, the experience hypothesis seems insufficient; yet its seeming insufficiency occurs only where the evi-

* "The Principles of Psychology," by Herbert Spencer.

dence is beyond our reach. Nay, even here, such few facts as we can get, point to the conclusion that automatic psychical connections result from the registration of experiences continued for numberless generations." And further on he says: "In the progress of life at large, as in the progress of the individual, the adjustment of inner tendencies to outer persistencies must begin with the simple and advance to the complex, seeing that, both within and without, complex relations being made up of simple ones, cannot be established before simple ones have been established."

From the foregoing considerations it follows that, in studying the evidence of intellectual progress, the phenomena which we may expect to observe are—firstly, a continuous succession of ideas; secondly, that the complexity of the ideas will be in an increasing ratio in proportion to the time; and thirdly, that the tendency to automatic action upon any given set of ideas will be in proportion to the length of time during which the ancestors of the individual have exercised their minds in those particular ideas. Hence it follows, as a corollary to this, that at the present time the tendency to automatic action will be greater in the lower animals than in the higher, because the minds of their progenitors have been exercised in the simple ideas, for which instinct is shown, for a greater length of time than those of the higher animals, amongst whom the simpler ideas have, at a comparatively recent period in the history of the race, been replaced, or otherwise modified, by ideas of a more complex character, which latter have not yet had time to become instinctive. And this is in accordance with what is practically observed in nature.

Now, in applying these principles to the study of progress in man, we must expect to find that the phenomena observed will be in proportion to the spaces of time we have to deal with in treating of man as compared with animals in general.

Assuming this psychological standard of humanity to have been at the level at which we find the highest of the lower animals that exist at the present time, we may suppose primeval man to have been so far acquainted with the use of tools as to be able to employ a stone for the purpose of cracking the shells of nuts, but incapable of trimming the stone into any form that would answer his purpose better than that into which it had been shaped by rolling in a river bed or upon the sea shore.

By the repeated use of stones for this and similar purposes, it would be found that, as Sir John Lubbock has pointed out, they sometimes split in the hand, and that the sharp edges of the fractured portions were more serviceable than the stones before fracture. By constant repetition of the same occurrence, there would grow up in the mind of the creature an association of

ideas between the fracture of the stone and the saving of labour effected by the fractured portion, and also a sequence of ideas by which it would be perceived that the fracture of the stone was a necessary preliminary to the other, and ultimately, by still continued repetition, the creature would be led to perform the motions which had been found effectual in cracking the stone before applying it to the purposes for which it was to be used. So also in using the various natural forms of the branches of trees which fell into his hands, it would be found that particular forms were of use for particular purposes; and by constant repetition there would arise an association of ideas between those forms and the purposes for which they were useful, and he would begin to select them for such purposes; and in proportion to the length of time during which this association of ideas continued to exist in the minds of successive generations of the creatures which we may now begin to call men, would be the tendency on the part of the offspring to continue to select and use these particular forms, more or less instinctively—not, indeed, with that unvarying instinct which in animals arises from the perfect adaptation of the internal organism to external condition, but with that modified instinct which assumes the form of a *persistent conservatism*.

"The savage," says Mr. Tylor, "is firmly, obstinately conservative. No man appeals with more unhesitating confidence to the great precedent-makers of the past; the wisdom of his ancestors can control against the most obvious evidence of his own opinions and actions."

In a similar manner mankind would be led to the conception of many other ideas, but of the majority of them no record would be preserved; it is only where the ideas have been associated with material forms that any record of them would be kept in prehistoric times; and this brings us to what I conceive to be the object of an anthropological collection—to trace out, by means of the only evidence available, the sequence of ideas by which mankind has advanced from the condition of the lower animals to that in which we find him at the present time, and by this means to provide really reliable materials for a philosophy of progress. We may not be able to find in these objects any associations that may lead us to form an estimate of the highest aspirations of the mind at any period of its development, but their importance to anthropologists consists in their value as evidence. Affording us as they do the only available evidence of man in his most primitive condition, they are well worthy of our attention, in order that by studying their grammar, we may be able to conjugate their forms.

Yet, although our data are thus limited to the material

arts of mankind, only a small portion of those of prehistoric races are available for our purpose. As already said, only those tools and implements which were constructed of durable materials have remained; the rest have perished, and we have only the implements of existing savages by which to judge of them. The question, therefore, is, to what extent they may be taken as the representatives of the implements of prehistoric men, seeing that in point of time they are contemporaneous with the arts of the most civilised races, and not with those of prehistoric races.

Scattered over the world in various localities are savage races showing various degrees of culture, some higher and some lower than others, many of which have now been greatly influenced by contact with civilised races, but of the majority of which we have more or less detailed records, dating from the time of their first discovery by Europeans, when their arts may be regarded as indigenous, or, at any rate, free from any admixture with the arts of civilised races.

If these savage races have been degraded from a higher condition of culture, then, seeing that sequence of ideas are necessary to the existence of any ideas whatever, we must inevitably find traces in their arts of those higher arts from which they descended. But if, on the other hand, they have risen from a lower state, and their present savage condition arises from their having advanced less rapidly than those races which are now above them in the social scale, then what are the conditions which we must expect to find prevailing amongst them?

We shall find, firstly, that the forms of their implements, instead of showing evidence of having been derived from higher and more complex forms, will, in proportion to the low state of their civilisation, show evidence of being derived from natural forms, such as might have been employed by man before he had learnt the art of modifying them to his uses; and secondly, we shall find that the persistency of the forms is proportioned to the low state of their culture.

Now this is found to be the case with nearly every race of savages of whose condition we have any knowledge. Lowest amongst the existing races of the world of whom we have any accurate knowledge are the Australians. All their weapons assimilate to the forms of nature; all their wooden weapons are constructed on the grain of the wood, and consequently their curves are the curves of the branches out of which they were constructed. In every instance in which I have attempted to arrange my collection in sequence, so as to trace the higher forms from natural forms, the weapons of the Australians have found their place lowest in the scale, because they assimilate most closely to the natural forms.

Of this many examples may be given. I will not now again enter into the history of the boomerang, to which I have already drawn the attention of the Society on former occasions. Those who wish to see the subject treated in greater detail will find it discussed in my catalogue of the collection, in which are also given the authorities for many facts that are mentioned here, and which the limits of time and space do not enable me to quote at length. Suffice to say that the whole of the Australian weapons can be traced by their connecting links to the simple stick, such as might have been used by an ape or an elephant before mankind appeared upon this earth, and I have arranged them so as to show this connection on the screens. Here also we are able to trace the development of the idea of a shield to cover the body, which in its simplest form is a simple parrying stick held in the centre, and which expands gradually into an oval shield. It is also shown upon the screens how the simple waddy, or club with a lozenge-shaped head, by a gradual development of one side, grew into a kind of wooden hatchet, which ultimately became converted into a hatchet-boomerang.

The whole of the Australian weapons, without exception, are of this simple character, and in proof of the persistency with which this nation has continued to employ the same forms, no further evidence is necessary than the fact that they are the same, with but slight variations, over the whole continent. The slight differences between them, as Mr. Oldfield has pointed out, are so minute as scarcely to be perceptible to a European, but sufficient to enable a native to determine at a glance from what locality any specimen that may be shown him has been obtained.

But although all the connecting forms between the forms of nature and the more advanced forms are found amongst the *existing* weapons of these savages, we are not to assume from this that the whole of the progress observed has been effected in modern times. The whole sequence of ideas connecting these weapons (which are now constructed in a manner to show that the art of producing them is partly automatic) was reasoned out by such processes of the mind as stood for reason, at various former periods in the history of the race, each successive improvement constituting a link in the chain of progressive development. Each link has left its representatives, which, with certain modifications, have survived to the present time; and it is by the means of these *survivals*, and not by the links themselves, that we are able to trace out the sequence that has been spoken of.

This is the hypothesis put forward, and which I profess to justify by the facts accumulated in this collection.

Every form marks its own place in sequence by its relative

complexity or affinity to other allied forms, in the same manner that every word in the science of language has a place assigned to it in the order of development or phonetic decay.

If there is such a thing as a science of language, and none can doubt it, who shall affirm that there is no such thing as a science of the arts? Language, it is true, embraces a wider sphere, and includes the arts; but, on the other hand, it is liable to sources of uncertainty for the purposes of science, from which the arts are free. Language is impalpable, invisible to the eye, except through the medium of a written character, which may or may not accurately express the sounds, and subject to acoustic changes in the collection of the materials, which are a perpetual cause of error and misclassification.

In tracing the development of the material arts, on the other hand, we have, in the earliest periods, the support of collateral evidence afforded by the fauna with which they are associated and by geological sequence, all which is wanting in a science of language.

Why, then, has language hitherto received more scientific treatment than the arts? Merely on account of the greater facility with which the data are collected. Whilst words take seconds to record, hours and days may be spent in the accurate delineation of form. Words cost nothing, are packed in folios, transmitted by post, and stored on the shelves of every private library. A million classified words may be carried in the coat pocket without inconvenience, whilst a hundredth part of that number of material objects require a museum to contain them, and are accessible only to a few. This is the reason why the arts have never been subjected to those classifications which form the groundwork of a science.

Then, again, in approaching prehistoric times, or in studying modern savages who represent prehistoric man, language loses its persistency, or fails us altogether. Although, in an advanced stage of civilisation, especially when it has been committed to writing, it affords the surest test of culture, this is certainly not the case with the lowest savages, amongst whom language changes so rapidly that even neighbouring tribes cannot understand one another. And if this is the case in respect to language, still more strongly does it apply to all ideas that are communicated by word of mouth. In endeavouring to trace back prehistoric culture to its root forms, we find that in proportion as the value of language and of the ideas conveyed by language diminishes, that of ideas embodied in material forms increases in stability and permanence. Whilst in the earliest phases of humanity the names for things change with every generation, if not more frequently, the things themselves are handed down

unchanged from father to son and from tribe to tribe, and many of them have continued to our own time, faithful records of the condition of the people by whom they were fabricated.

Of the antiquity of savages we at present know little or nothing; but when archæologists have exhausted the antiquities of civilised countries, a wide and interesting field of research will be open to them in the study of the antiquities of savages, which are doubtless to be discovered in their surface and drift deposits; and if the stability of their form has been such as we have reason to believe, we shall then be able to arrive at something like certainty in respect to the degree of slowness or rapidity, as well as the order, in which they have been developed.

Leaving now the Australians, and turning to other existing races in a higher, though still in a low, stage of civilisation, such as, for example, the Fijians, who at the time of their discovery were still in the stone age, we find, on examining the forms of their implements, that we are in a higher stratum of culture, the characteristics of which correspond exactly to what might have been expected to be found on the principle of gradual evolution. The forms of their tools and weapons present the same connections of form between themselves as amongst those of the Australians, but they are of a more complex type, and are no longer directly traceable to the natural forms of the limbs of trees, etc. The links of connection between weapons of the same kind are as close as before, but in their varieties they present forms so singular as scarcely to make it possible to infer that they were designed for the purposes of use. They appear rather to have varied through the instrumentality of some law of succession similar to that by which species of animals have been evolved. In many cases, indeed, the sequence of ideas has led to the use of forms that are absolutely unserviceable as weapons and tools, and human selection, corresponding to natural selection, appears to have retained for use only such forms as could be employed, whilst the others have been consigned to state purposes or applied to symbolic uses. In many cases we find that their clubs have been converted into the forms of animals' heads, and in all such cases (and there are several in the collection) we see, by grouping a sufficient number of like forms together, that those which are in the shape of animals' heads have not been designed for the purpose of representing animals' heads, but their forms have simply been evolved during the numerous variations which the weapon has undergone in the process of development, and when the idea of an animal's head suggested itself, it has merely been necessary to add an eye, or a line for the mouth, in order to give them the resemblance in question. Examples of this may be seen in the collection of specimens from Africa, New Caledonia, New Zealand, and Solomon Isles.

In ornamentation, the stability of form is very remarkable. Particular forms of ornamentation fix themselves on a tribe or nation, and are repeated over and over again with but little variation of detail, as, for example, in the case of the coil and broken coil ornaments amongst the New Zealanders and the inhabitants of New Guinea, which were probably derived from Assam, or the representation of the head of an albatross amongst the Indians of the north-west coast of North America, or that of a human head amongst the inhabitants of New Ireland.

In the transformations of this latter ornament, which I took occasion to bring to the notice of the meeting of the Anthropological Department of the British Association at Brighton,* and which are represented in the annexed plate (xxii), we see a remarkable example of degradation of form produced by gradual changes, caused by these people in copying from one another until the original design is lost. The representation of a human figure is here seen to lose gradually its limbs and body, then the sides of the face, leaving only the nose and ears, and ultimately the nose only, which finally expands at the base, and is converted into the representation of a half moon. In this sequence we have an exact parallel to the transformations observed upon ancient British coins by Mr. Evans,† by which a coin of Philip of Macedon, representing a chariot and horses, becomes converted by a succession of similar changes into the representation of a single horse, and ultimately into fragments of a horse. Other examples of similar transformations from other countries are also shown.

Amongst other advantages of the arrangement by form, is the facility it affords for tracing the distribution of like forms and arts, by which means we can determine the connection that has existed in former times between distant countries, either by the spread of race, or culture, or by means of commerce. Thus I have been able to trace the distribution of the bow over a large area, with evidence of its having spread from a common centre. In the Asiatic islands and the Pacific, the line of its southern boundary is very clearly defined, marking off as non-bow-using races the whole of the inhabitants of Australia except Cape York, Tasmania, and formerly New Zealand and New Caledonia. Above this line the use of the bow spread from the Asiatic isles, and its transmission to the Papuan and Polynesian isles is due to the Malays, the Malay word for it—viz., “panna”—being used over the whole of the region in question with but slight variations.

In the southern hemisphere, where suitable materials for the

* Address to the Department of Anthropology—Report of the British Association, 1872.

† “Coins of the Ancient Britons,” by John Evans, Esq., F.R.S., pp. 24–32.

construction of it are abundant, the bow is of the form of the arcus, or simple arch; but in the frigid regions to the north, there are large tracts in Europe, Asia, and America which are either totally destitute of trees, or covered with coniferous forests, yielding few or any woods that have sufficient spring for the construction of a bow, and there is reason to believe, from the traces of forests discovered at low levels beneath the soil in various places, that this inhospitable region extended more to the southward in ancient prehistoric times. In such a region it is unlikely that the invention of the bow should have originated, and when the knowledge of it was communicated from the south, it would be necessary to employ some other elastic material to combine with the stiff pine wood, and give it the necessary elasticity; hence the composite bow, which is the bow of the northern hemisphere, and which consists of a combination of wood and sinew, or wood and bone. In its varieties I have traced this bow over the whole of the northern hemisphere, including Lapland, Siberia, and the northern part of North America. It is the bow of the ancient Persians and Scythians. The northern people carried it into India and into China, and also eastward into America, where its distribution is traced in two channels, one extending along the region inhabited by the Esquimaux into Greenland, and the other along the west coast as far south as California; and throughout the region mentioned, its varieties show it to have sprung from a common prototype.

Here also I may select, from amongst other illustrations of the same kind that are to be found, a single example of the manner in which the implements of modern savages may be made to explain the construction of those of races of antiquity, described upon their monuments. Quivers for arrows do not admit of much variety by which to trace improvement, and for this reason they must have continued unchanged in form much longer than contrivances which were susceptible of development; but the combination of quiver and bow case in one, may be traced over the whole of the region of the composite bow, the sinews of which made it necessary that it should be kept dry. Mr. Rawlinson, in his "Five Ancient Monarchies" (vol. ii, p. 57), gives an illustration of an Assyrian quiver taken from ancient sculptures at Khorsabad. "It had an ornamental rod attached to it, which projected beyond the arrows and terminated in a pomegranate blossom or other similar carving. To this rod were attached the rings which received the strap by which it was suspended to the shoulders." The learned author adds: "It is uncertain whether the material of the quivers was wood or metal." The conventional mode of representing these objects and the imperfect command which the Assyrians had over the hard stone of the sculp-

tures, gives to the majority of the objects represented, the appearance of having been constructed of some hard material, as is clearly seen in the case of the hair and drapery; but, on turning to the quivers now used by the Indians of California, we at once see that the material of the quiver is explained by the form and position of the above-mentioned rod, which is fastened on the outside of it for the purpose of keeping the *limp* skin bag that contains the arrows stiff and straight, and thereby enabling the bowman to draw out his arrows with the necessary rapidity. And this enables us clearly to understand why, as stated by Mr. Rawlinson, not a single example of a quiver was found in the Assyrian excavations. In the Californian, as in the Assyrian quivers, the rod extends beyond the quiver, and is probably intended to guard the arrows from injury.

It is unnecessary in this place to add to the number of examples. The object of this paper, as already stated, is to explain the principles of classification. For the evidence on which these principles are based I must refer you to the catalogue. Whether these principles of classification are correct or not is a matter of less consequence than the arrangement of the facts, by which every person is enabled to form his own idea of the manner in which progress has been evolved in early times.

Human ideas, as represented by the various products of human industry, are capable of classification into genera, species, and varieties, in the same manner as the products of the vegetable and animal kingdoms, and in their development from the homogeneous to the heterogeneous they obey the same laws. If, therefore, we can obtain a sufficient number of objects to represent the succession of ideas, it will be found that they are capable of being arranged in museums upon a similar plan.

The resemblance between the arts of modern savages and those of primeval man may be compared to that existing between recent and extinct species of animals. As we find amongst existing animals and plants, species akin to what geology teaches us were primitive species, and as among existing species we find the representatives of successive stages of geological species, so amongst the arts of existing savages we find forms which, being adapted to a low condition of culture, have survived from the earliest times, and also the representatives of many successive stages through which development has taken place in times past. As amongst existing animals and plants, these survivals from different ages give us an outline picture of a succession of gradually improving species, but do not represent the true sequence by which improvement has been effected, so, amongst the arts of existing people in all stages of civilisation, we are able to trace a succession of ideas from the simple to the complex, but not the

true order of development by which those more complex arrangements have been brought about. As amongst existing species of animals, innumerable links are wanting to complete the continuity of structure, so amongst the arts of existing peoples there are great gaps which can only be filled by prehistoric arts. What the palæontologist does for zoology, the prehistorian does for anthropology. What the study of zoology does towards explaining the structures of extinct species, the study of existing savages does towards enabling us to realise the condition of primeval man. To continue the simile further, the propagation of new ideas may be said to correspond to the propagation of species. New ideas are produced by the correlation of previously existing ideas in the same manner that new individuals in a breed are produced by the union of previously existing individuals. And in the same manner that we find that the crossing of animals makes it extremely difficult to trace the channel of hereditary transmission of qualities in a breed, so the crossing of ideas in this manner makes it extremely difficult to trace the sequence of ideas, although we may be certain that sequence does exist as much in one case as the other.

Continuing still further the simile, we find that, as in the breeding of animals, when the divergence of races has gone so far as to constitute what is called distinct species, they cannot interbreed, so when the development of ideas has run in distinct channels far enough to create a hiatus, no intercommunication can take place. Two men of very different culture may travel in the same coach together, and, though speaking the same language, may find themselves unable to communicate except upon common-place topics in which the simple ideas are common to both. Or two nations in very different stages of civilisation may be brought side by side, as is the case in many of our colonies, but there can be no amalgamation between them. Nothing but the vices and imperfections of the superior culture can coalesce with the inferior culture without break of sequence.

Progress is like a game of dominoes—like fits on to like. In neither case can we tell beforehand what will be the ultimate figure produced by the adhesions; all we know is that the fundamental rule of the game is *sequence*.

Discussion having been invited, Mr. John Evans spoke at some length, and was followed by the President, who offered a few observations. The meeting then separated, having voted its thanks to the author of the paper.

Colonel Fox then conducted the members of the Institute, and the visitors present, over the Collection described in the paper, and gave a detailed description of his arrangement of the numerous objects and specimens in classes and sub-classes.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.

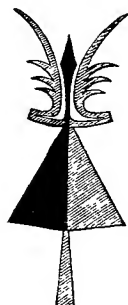


Fig. 9.



Fig. 10.

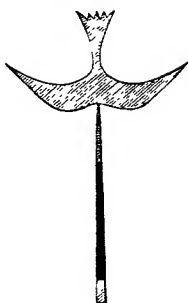
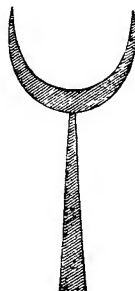


Fig. 11.



ORNAMENTATION OF NEW IRELAND PADDLES, SHEWING THE
TRANSITION OF FORM

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

NOVEMBER 10TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The MINUTES of the last meeting were read and confirmed.

The following LIST of PRESENTS received was read, and the thanks of the meeting were voted to the donors.

FOR THE LIBRARY.

From the SOCIETY.—The Journal of the Royal Geographical Society. Vol. XLIII. Proceedings, ditto, Vol. XVIII. Nos. 2, 3, and 4.

From the EDITOR.—Revue Scientifique. Nos. 1-19, 2me Série, 1874.

From the AUTHOR.—Hereditary Genius. By Francis Galton, F.R.S.

From the AUTHOR.—The Principles of Science; 2 vols. By W. S. Jevons, F.R.S.

From Messrs. LONGMANS & Co.—A Manual of Anthropology, or Science of Man. By Charles Bray.

From the AUTHOR.—Catalogue of Anthropological Collection in the Bethnal Green Branch of the South Kensington Museum. By Col. A. Lane Fox, F.S.A.

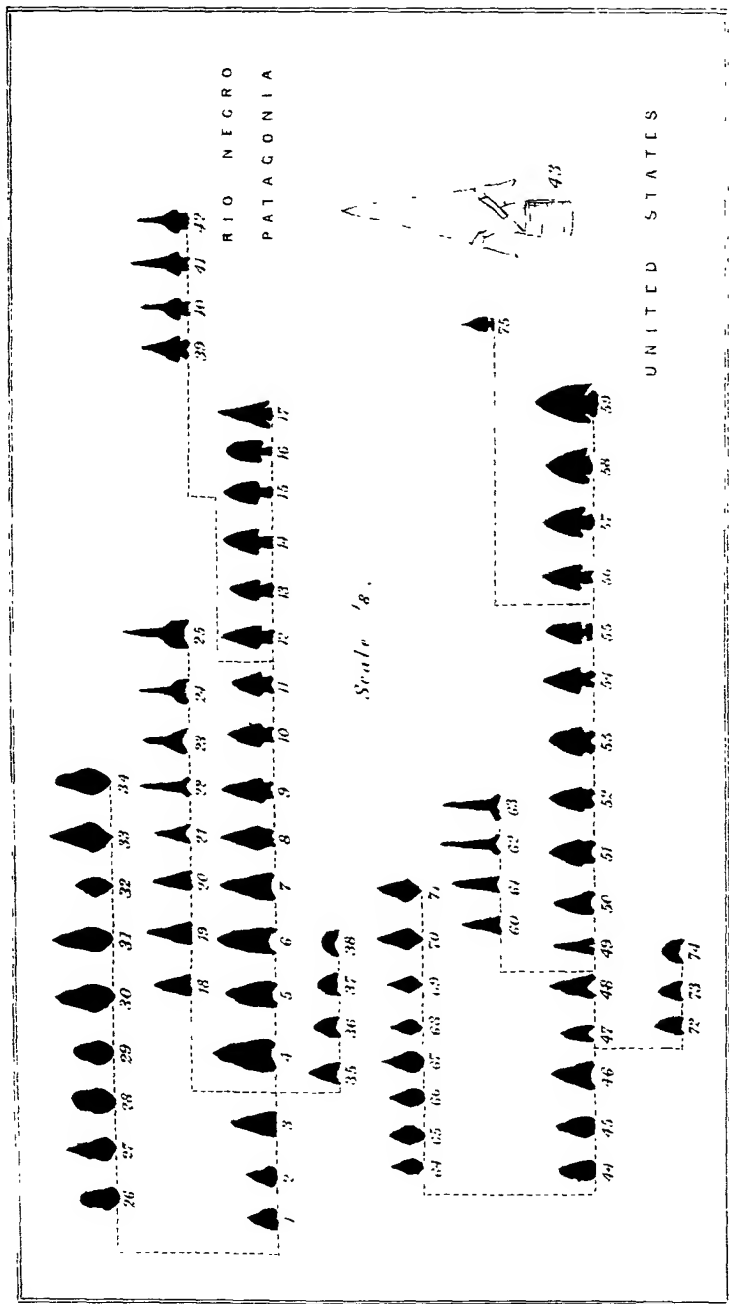
From the ACADEMY.—Bulletin de l'Académie Royale de Copenhague. No. 3, 1873; No. 1, 1874.

From the SOCIETY.—Proceedings of the Asiatic Society of Bengal. Nos. 2-8, 1874. Journal, ditto, Part 1, Nos. 1 and 2, 1874; Part 2, No. 4.

From the SOCIETY.—Proceedings of the Philosophical Society of Glasgow. Vol. VIII. No. 3.

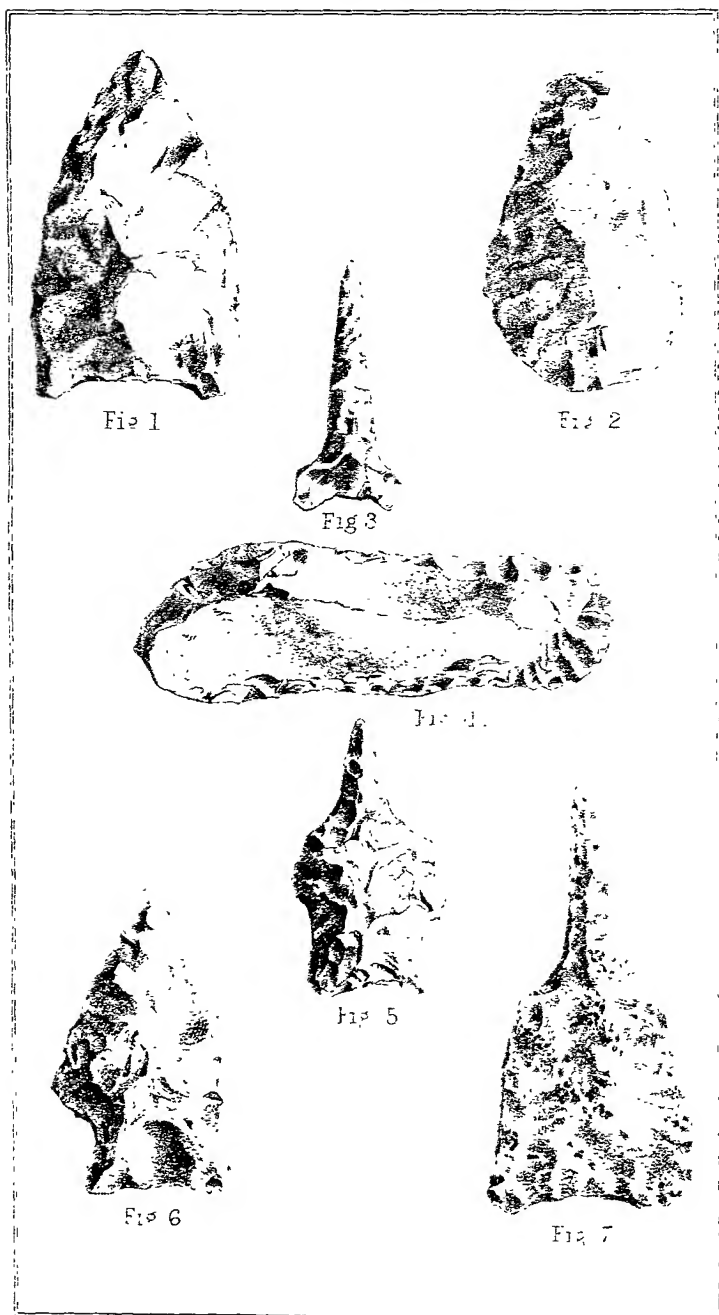
From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. VIII. Nos. 5 and 6.

- From the ANTHROPOLOGICAL SOCIETY OF SPAIN.—*Revista de Antropologia*. Vol. I. No. 5.
- From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. IV. Nos. 2 and 3.
- From the ASSOCIATION.—Report of the British Association, 1873. Bradford.
- From the SOCIETY.—Proceedings of the Royal Society. Vol. XXII. Nos. 153-155, 1874.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XVIII. No. 77.
- From the AUTHOR.—The Hill Ranges of Southern India. By Dr. John Shortt.
- From JAMES BURNS, ESQ.—Human Nature, for August, September, and October, 1874.
- From the SOCIETY.—Memoirs of the Boston Society of Natural History. Part 2, Vol. IV.; Part 3, Nos. 1 and 2. Proceedings, ditto, Vol. XV. Nos. 3 and 4; Vol. XVI. Nos. 1 and 2.
- From F. V. HAYDEN, ESQ.—Synopsis of the Flora of Colorado. By T. C. Porter and J. M. Coulter.
- From the ROYAL ACADEMY OF SCIENCES, BELGIUM.—*Mémoires Couronnés et Mémoires des Savants Etrangers*, Tome XXXVIII.; *Mémoires de l'Académie Royale des Sciences de Belgique*, Tome XL.; Bulletin, ditto, Tomes XXXV. and XXXVI.; *Mémoires Couronnés et autres Mémoires*, Tome XXIII.; *Annuaire de l'Académie Royale de Belgique*.
- From the Rev. T. FELTON FALKNER.—Journal of the Ceylon Branch of the Royal Asiatic Society for 1847-73.
- From the SOCIETY.—Transactions of the Geological Society of Glasgow. Vol. IV. Part 3.
- From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscou. No. 4, 1873; No. 1, 1874.
- From the AUTHOR.—Nature's Revelations of Character. By Dr. J. Simms.
- From the ASSOCIATION.—Journal of the East India Association. Vol. VIII. No. 2.
- From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. III. No. 18.
- From the INSTITUTE.—*Jahrbuch der K. K. Geologischen Reichsanstalt*, Vol. XXIV. No. 2. *Verhandlungen*, ditto. No. 7, 1874.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. III. Nos. 6, 7, and 8.
- From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—*Zeitschrift für Ethnologie*. Nos. 3 and 4, 1874.
- From the EDITOR.—*Cosmos* di Guido Cora. Vol. II. Nos. 2 and 3, 1874.
- From the AUTHOR.—*Du Prognathisme Alveolo-sous-nasal*. By Dr. P. Topinard.
- From the EDITOR.—*Archiv für Anthropologie*. Siebenter Band, Nos. 1 and 2.
- From the INSTITUTE.—The Canadian Journal. Vol. XIV. No. 111.



C. F. Hall, Litho London E.C.

TABLE OF COMPARISON OF ARROW HEADS FROM
THE UNITED STATES & PATAGONIA



STONE IMPLEMENTS, RIO NEGRO.

PATAGONIA

From the SOCIETY.—Transactions of the Royal Society of Victoria.
 From the SECRETARY OF STATE FOR THE COLONIES.—The Narrin-
 yeri; an Account of the Tribes of South Australian Aborigines.
 By the Rev. George Taplin.
 From the ASSOCIATION.—Report of the Devonshire Association.
 From the EXECUTORS of the late HENRY CHRISTY, Esq.—Reliquiæ
 Aquitanicæ. Part 15, September, 1874.
 From the EDITOR.—Nature (to date).

The following paper was read by the author :

ON a SERIES of about two hundred FLINT and CHERT ARROW-
 HEADS, FLAKES, THUMBFLINTS, and BORERS, from the RIO
 NEGRO, PATAGONIA; with some REMARKS on the STABILITY
 of FORM observable in STONE IMPLEMENTS. By Col. A. LANE
 FOX. [With Plates xxiii. and xxiv.]

THE series of arrow-heads now exhibited was obtained by me a few weeks ago from Mr. W. H. Hudson, who collected them in the valley of the Rio Negro during a year's residence there, in 1870-1. They are a selection from about 500, the majority of which were broken, collected by that gentleman in various localities along both banks of the river, for a distance of 90 miles from its mouth. A valuable collection of birds obtained by Mr. Hudson at the same time has been described by him and Dr. Selater, in the Proceedings of the Zoological Society in 1872.*

By a letter addressed to me by Mr. Hudson, which accompanied the transfer of these specimens into my collection, it appears that the arrow-heads and other articles of Indian workmanship are found on the sites of ancient villages, either on the margin of the river itself, or on the long, winding lagoons, now mostly dry, with which the valley is everywhere intersected. The valleys in that region run through high, terraced, table lands, and on the plateaux above there is no water, and but very scanty vegetation, so that it is improbable they could ever have been inhabited.

In the valley below, the sites of villages are numerous, sometimes two or more occurring within the area of one square mile, but till recently they have been concealed beneath a rank growth of reeds and grasses, and several inches of soil.

Within the last few years the valley, which is six to nine miles wide, has been overstocked with sheep, and the grass and herbage, closely cropped by them, has in many places been

* "On the Birds of the Rio Negro, Patagonia." by W. H. Hudson, C.M.Z.S., with notes by P. L. Selater, Esq., M.A., Ph.D., F.R.S., Secretary of the Society. 'Proceedings of the Zoological Society for 1872,' p. 534.

killed by the long and frequent droughts. The light, sandy soil, no longer having anything to hold it together, is constantly being blown off by the violent summer winds. In the summer of 1870-1, when this collection was made, dense, blinding clouds of dust hung every day over the valleys, and Mr. Hudson frequently traversed many miles of country that were "as barren of vegetation as Trafalgar Square." In some places as much as twelve inches of soil had been removed by the wind, and the long-hidden villages and burial places of the Indians had thus been exposed.

The site of a village, "paradero," is discovered by small fragments of artificially broken stone, with which the ground is abundantly strewn. In some places these fragments are all that is to be seen, the most careful search being unrewarded by the discovery of a single arrow-head or other manufactured article. In others Mr. Hudson found numbers of circular, flattened mounds of clay, six to eight feet in circumference, and placed near together. Here arrow-heads, about three-fourths of them broken, were found; also mortars and pestles of stone, fragments of rudely ornamented pottery, bits of perforated shell, and beads of bone, often coloured blue, and stone balls varying much in size and form, the commonest form being an oval stone, flattened at the ends, and a round ball weighing about a pound, having a shallow groove about the middle. This last is the *Bola perdida*, a weapon still used by the Pampa and Tehuelche Indians. Fragments of bone were also common, most of them being of the diminutive *Ctenomys Magellanica* and *Caria Australis*. Bones of the guanaco and other large mammals are comparatively rare.* The burial place is generally discovered a mile or more from the village. The skeletons are placed in a sitting posture, and beads and arrow-heads are sometimes found with them.†

In his frequent visits to the villages, whilst making so large a collection, Mr. Hudson observed that in different villages there was a marked difference in the style of workmanship; in some the arrow-heads were exceedingly rough and blunt, in others sharp and elaborate, but sometimes there was also a difference in size and form. In answer to my inquiry whether this difference might have arisen from a difference in the quality of the material available in different localities, he informs me that the soil in Eastern Patagonia, in the valleys as well as on the plateaux, consists of rounded pebbles mixed with sand, so that wherever the stone-workers fixed their habitations,

* M. Moreno, however, speaks of the presence of guanaco bones, split longitudinally for extracting the marrow.

† According to M. Moreno, horse's bones are not found in these graves.

there the materials of all the different kinds used for arrow-heads were abundant. He does not, therefore, think that the difference of type in the different villages could have arisen from the cause suggested by me, but must be rather attributed to some families and villagers having acquired greater skill than others, and to their having adopted a slightly different variety of form. But although the materials of all kinds are abundant on the Rio Negro, they are not found on the Pampas, where arrow-heads are also discovered, and where the materials must have been brought several hundreds of miles.

One of the chief points of interest connected with the discovery of these arrow-heads arises from the use of this weapon having been given up by the Tehuelches and other tribes inhabiting Patagonia for some centuries past. According to Consul Hutchinson, the Mataguaya and Tobas are the only Indians who make use of the bow and arrow south of the Vermejo, which flows from the Bolivian Andes into the Paraguay river, in lat. 27 S.* South of this line it is not used until we come to the Fuegians on the Straits of Magellan.

I am indebted to Mr. Hudson for drawing my attention to the history of Schmidt, one of Mendoza's expedition, who settled in Buenos Ayres in 1535, and that of Rui Diaz de Guzman, who composed his history about 1600. From these works, which I have not had an opportunity of verifying, Mr. Hudson informs me that it appears evident the bow and arrow was not in use in Buenos Ayres at the time of the Spanish conquest, nothing but the spear and the bola perdida having been found in the hands of the aborigines of the Buenos Ayrian Pampas at that time.

Further south, in the neighbourhood of Port St. Julian, in the year 1519, Pigafetta mentions it as being used by the Patagonian Indians. Lieut. Musters, R.N.,† whose valuable paper on the "Races of Patagonia" was published in the first volume of the journal of the Institute, throws some doubt on the accuracy of Pigafetta's statement, and believes that he either met with a party of Fuegians, or else with a tribe of the Pampas Indians living on the sea coast further north, and gives as a reason for so thinking that he met with no arrow-heads in the soil lower south than the Rio Negro. It must be admitted, however, that Lieut. Musters's evidence on this point is purely negative, and as such cannot be held to weigh against the very circumstantial account of Pigafetta, who from his description of the affair, clearly refers to the gigantic Patagonian, and not

* 'Trans. Ethnol. Soc.' vol. iii. pp. 321-334.

† "On the Races of Patagonia," by Lieut. Musters, R.N. 'Journal of the Anthropological Institute,' vol. i. No. 2, Oct. 1871, p. 198.

to the diminutive Fuegian. The country may also be inferred, from Pigafetta's description, to have been thinly inhabited, and this may perhaps, in some measure, account for the scarcity of arrow-heads in these parts.

Pigafetta says: "On leaving the islands of St. Elmo, St. Nicholas, and St. Clare, we ascended as high as 49° 30' south, where we discovered an excellent port (Port St. Julian), and as winter approached, we thought it best to take shelter here during the bad weather. Two months elapsed without our seeing any inhabitants of the country. One day, when we least expected anything of the kind, a man of gigantic figure presented himself before us. He capered almost naked upon the sands, and was singing and dancing, at the same time casting dust on his head. The captain sent one of our seamen on shore with orders to make similar gestures, as a token of friendship and peace, which were well understood, and the giant suffered himself to be quietly led to a small island where the captain had landed. . . . This man was of such immense stature that our heads scarcely reached to his waist. He was of handsome appearance, his face broad and painted red, except a rim of yellow round his eyes, and two spots in the shape of a heart upon his cheeks; his hair, which was thin, appeared whitened with some kind of powder." Then, after describing his cloak, which was made of the skin of the guanaco, he says, "This man also wore a sort of shoe made of the same skin." It was on account of this shoe, which made the feet of this man resemble the foot of a bear, that Magellan called these people Patagonians. "He held a short, massive bow," he continues, "the string of which, somewhat thicker than that of a lute, was made of the intestines of the same animal; in the other hand he held arrows made of short reeds, with feathers at one end, similar to ours, and at the other, instead of iron, a white and black flint-stone."* In several other passages Pigafetta also speaks of the arrows of these people, and always in connection with a people of large stature. Making, therefore, due allowance for exaggeration in regard to the enormous height of these people, there can be little doubt that it was a tribe of the Tehuelche race that he was describing; and we may therefore fairly assume that at least a portion of this race were armed with the bow and arrow four centuries ago.† But at what period it began to be disused, or what causes may have

* Pigafetta's "Voyage Round the World." Pinkerton's 'Travels,' vol. xi. page 314.

† It appears that arrows are mentioned in these parts by Francisco Sarmiento de Gamboa in 1580. "Description des Cimetières et Paraderos Préhistoriques de Patagonie, par François P. Moreno fils." 'Revue d'Anthropologie,' Tome troisième, 1874, No. 1.

led to its being abandoned over so large a portion of the South American continent, I am not aware that we have any evidence to show.*

Pigafetta also says, that with the same stone they employed to point their arrows, they also formed instruments to work wood. Lieut. Musters informs us that the only flint tools now used by them are scrapers, which the old women employ to scrape skins. Two or three small scraper-like forms found in the villages are exhibited, but none of sufficient size to be conveniently employed in dressing skins. One of them, a long flake, bevelled at the end (fig. 4, Pl. xxiv.), corresponds to the form known as a thumbflint in this country.

It only now remains to say a few words upon the forms of the arrow-heads, and on the connections deducible from them. I believe that, owing to our inability to understand the uncultured mental condition of savages and pre-historic races, we often lose sight of the inferences deducible from the stability of form observable in their arts and implements, and attach less importance than ought to be attached to minute varieties of structure. We are now beginning to understand what a grotesque conception of the powers above us our anthropomorphism has led us to form in times past; and in our automorphic view of savages we are equally misled by the tendency to underrate the time and mental effort necessary for the accomplishment of slight changes, so that we fail from this cause to appreciate the evidence of common origin afforded by the discovery that implements of uniform type are spread over large geographical areas.

In the last number of the "Memoirs of the Geological Survey of India," in an article on the 'Geology of Pegu,' by Mr. Theobald,† kindly sent to me by the author, I was glad to see that he had taken up this view of the subject, which, without dogmatising on what must still be regarded as an unsettled problem, may be safely pronounced worthy of the careful attention of anthropologists.

After describing the similarity of the stone implements of India and Europe, he says, writing from Burmah, and apparently in ignorance that opposite views to his own are entertained by many prehistoric archaeologists in this country: "Were there, however, any objectors so hardy as to argue that such similarity of monuments, both industrial, funereal, and religious, was

* M. Moreno, in the paper before referred to, says that no bones of the horse are found associated with the arrow-heads, proving that their use was anterior to, and, in his opinion, their discontinuance was consequent upon, the introduction of that animal.

† "Memoirs of the Geological Survey of India," vol. x. p. 2, 'Geology of Pegu,' by W. Theobald, Esq.

merely the result of fortuitous similarity of conditions, it would seem as though a conclusive answer to such a supposition was provided in anticipation in British Burmah. It seems difficult to imagine what differing conditions could have obtained during the savage infancy of our race in Burmah, greater than existed between India and Europe; yet directly we cross from India, properly so called, to the countries lying to the eastward of the Bay of Bengal, we find stone implements no less abundant than elsewhere, but of an entirely different type. We no longer find the familiar Indo-European type, either palæolithic or neolithic, but one seemingly autochthonous to the Malayan countries, and, both in size, shape, and design, displaying considerable divergence from any of the ordinary types of weapons found elsewhere."

When Lieut. Musters, about three years ago, was kind enough to make me a present of a single Patagonian arrow-head—the first, I believe, from that region that had been brought to this country—I was at once struck, as were also others to whom I showed it, by its being of an American type, similar to those which are commonly found in the surface soils of the United States. Had I found such an arrow-head on the surface of a ploughed field in England, whilst looking for the relics of prehistoric man, I should at once have conjectured that it might possibly have been an American arrow-head accidentally dropped there by a collector; and yet the difference between it and those of the European type of barbed arrow-head, such as I might have expected to find, consisted only in the slightly greater breadth of the tang and the somewhat different direction of the barbs.

It would have been unsafe, however, to have based any conjecture on the peculiarities of a single specimen; but now that we have this large collection of 200 specimens before us, we are able to affirm with certainty that the arrow-heads of these early inhabitants of the Rio Negro are nearly identical in form, and probably similar in development, to those of the United States.

Notwithstanding the slight difference of form in the different villages noticed by Mr. Hudson, it will be seen, by arranging the whole series in lines according to their affinities, in the manner represented in Plate xxiii., that there is a remarkable continuity throughout the series, each form passing into the other by connecting links, as is invariably the case in the weapons of savages, so that we are able to trace with tolerable certainty the sequence of ideas by which the most perfect and improved forms have grown out of the ruder forms.

Here, as in the United States and in Europe, we have four

types of arrow-head—the leaf-shaped, lozenge-shaped, triangular, and barbed; but, whereas in Europe the leaf-shaped is by far the commoner form, these specimens agree with those of the United States in presenting but few specimens of that variety. The lozenge-shape is also of rare occurrence in the United States, and in this series there are but two specimens—Nos. 33 and 34, Plate xxiii.—which approach to that form, if indeed it can be recognised at all in the collection before us. The triangular form is common in all three localities, and in all three there are sub-varieties of these with straight and concave bases. But it is in the form of the “tang” or stem of the barbed variety that the distinctive difference between the European and American arrow-heads consists, and in this respect the Patagonian arrow-heads resemble closely those found in the United States.

The tang of the European barbed arrow-head appears to have been introduced by narrowing the lower half of the leaf-shaped or lozenge-shaped form, or that of the simple flake, which latter, when formed of a homogeneous flint, naturally assumes the leaf-shaped form in the act of being flaked off from the core. The binding which secured the tang to the shaft was wound spirally round the end of the shaft, embracing the tang of the arrow-head between the split ends of the shaft; a narrow tang corresponding to the dimensions of the end of the shaft must, therefore, have been used from the first.

But in running the eye from left to right along the series of Patagonian arrow-heads as I have arranged them in Nos. 1 to 17, Pl. xxiii., it appears probable that the triangular form was the first to suggest itself to the American savage. This was probably bound on to the shaft as it is bound on by the Californian Indians who now use it (fig. 43, Pl. xxiii.), and as it is found bound to the short harpoon-heads to which some of this form are found attached in the Peruvian graves, by means of a string of gut or cotton wound cross-wise and embracing the sides of the triangular arrow-head, the base projecting on each side of the shaft.

In order to guard the edges of the string, where it passed over the sides of the arrow-head, from injury in piercing the animals at which it was shot, the part of the sides which was contiguous to the string was improved by being sunk a little (figs. 8, 9, 10, Pl. xxiii.) and allowing the part of the flint which was before the string to project, so as to guard the string from friction against the substance pierced. This projecting shoulder appears to have developed into a barb in the more advanced specimens (figs. 11 to 17, Pl. xxiii.), whilst the base, reduced by the part taken off to receive the string, diminished gradually into a tang. It still, however, retained

the trace of its origin by being broader than the tang of the European barbed forms, and by retaining in some instances the concavity at the base (figs. 6 to 11, Pl. xxiii., and fig. 6, Pl. xxiv.). This latter is never seen in the tangs of the European specimens, but only in those of the United States and Patagonia.*

It appears, therefore, probable that in Europe and America the same, or nearly the same, form of barbed arrow-head has been produced by different lines of development, and that in the United States and Patagonia the development has been the same. A series of North American arrow-heads showing a similar development is arranged in Pl. xxiii., figs. 44 to 75.†

I know of only one European specimen from Scandinavia figured in Professor Nilsson's work which at all resembles the American type. It is of triangular form, with side notches, but has a straight base.

In the colour of the skin, the hair, and other physical peculiarities, the inhabitants of the two continents of America have been recognised by Professor Huxley and others as being of the same primeval stock. May we not regard the resemblances that have been noticed as indicating probable identity of culture?

It would be contrary, however, to all experience to expect that forms of implements in regions so remote from one another as the United States and Patagonia should be perfectly identical. There is one variety in the series before us which, in so far as I know, appears to be unique. Some of the points both of the triangular and barbed varieties are very much elongated and tapered, giving the sides of the arrow-head in that part a concave form, and these elongated points appear to have developed into and to have been used as borers for piercing holes in hard substances. (Figs. 23 to 25, and 39 to 42, Pl. xxiii., and fig. 5, Pl. xxiv.) Of this fully-developed borer, one very well-defined and elaborately chipped specimen is exhibited (fig. 7, Pl. xxiv.). Fig. 75, Pl. xxiii., from the Mississippi, is the only other example of this form that I have seen; it is in the Christy collection, but it can hardly be considered typical.

It is stated by Professor Nilsson, in his work on the "Stone Age of Scandinavia," translated by Sir John Lubbock, that the

* It is probable that in some cases this reduction of the sides of the triangular arrow-head may have been introduced to enable it to fit into a socket in the shaft, and thus become detached from the shaft in the wound; but in the majority of cases the expansion of the tang at the base appears to me to prove that they were tied on, as in the Californian specimen. Whatever the object, it applies equally to both countries.

† It is worthy of note that the triangular arrow-head is seldom or never used by the Esquimaux, and the cross binding is never employed by them.

Fuegians use their arrow-heads as knives, as do the Kaffirs the iron-heads of their assegais. The Patagonian Indian would no doubt use them for the same purpose, and by boring holes with his arrow-head, he would be led to adapt the point to this purpose, and gradually to construct special boring instruments of this form. The resemblance between the fully-developed Patagonian borers here exhibited and some of the European flint-borers found in the surface soils is very close, but I am not aware of having ever noticed any European arrow-heads which appeared to have been especially modified for boring purposes.

There are also some varieties of North American arrow-heads which are not represented here, as, for instance, a chisel-shaped form, and a particular variety of the barbed form, with deep side-notches, and barbs extending to the line of the base. (Figs. 58 and 59, Pl. xxiii.)

Here, as in North America, Europe, and Japan, we find one or two examples of arrow-heads with the sides carefully serrated. The close resemblance of these serrated specimens from different countries might at first sight be taken to denote special evidence of connection, but I am myself inclined to attach less importance to this, as implying identity of origin, than to some other forms of implements. The mode of working flint and other materials which flake off with a conchoidal fracture, by taking off flakes and leaving facets from the edge alternately on opposite sides, naturally produces a more or less serrated edge, in consequence of the projection of the edges between the facets. A perfectly serrated edge, therefore, appears to me to be a refinement of workmanship produced by deepening the facets, which might or might not have been produced independently in different countries.

I trust I have not over-tried the patience of the meeting by dwelling too minutely on these details of construction, in describing what we must regard as part of the written language of prehistoric ages. If we are to study the implements of savages, we must endeavour to regard them as savages would have done. Trivial as some of these details may appear to us, we must remember that to the Indian, living by the chase, an improvement in the mode of fixing an arrow-head, affecting, as it does, his means of subsistence, must have been of far greater importance to him than an improvement in a telegraph or a steam engine can be to us, and must, therefore, have received the attention of the best intellects of the time; and as we know that it is only by the gradual evolution of scientific ideas that modern improvements have been brought about, so we must also look for similar stages of evolution in the simple

arts of savages. In attempting to solve the problem as to the unity or diversity of origin of the culture of different geographical areas, it is only by comparing, by means of these details, like courses of development in different countries that we can approach with any hope of success what Professor Nilsson has justly termed "one of the great, still unsolved enigmas of anthropological science."

EXPLANATION OF PLATES XXIII. AND XXIV.

Plate xxiii. contains a series of outline figures of arrow-heads, reduced to one-eighth natural size, showing a parallel development in Patagonia and the United States. The ruder forms are on the left. In running the eye from left to right a gradual transition to the more advanced forms may be observed.

Plate xxiv. contains drawings of five arrow-heads, one scraper, and one borer, from the Rio Negro, Patagonia.

APPENDIX.

NOTE on the MINERALOGICAL CHARACTERS of the STONE ARROW-HEADS from the RIO NEGRO. By F. W. RUDLER.

AN inspection of Colonel Lane Fox's fine collection of arrow-heads, &c., recently brought from the Rio Negro, shows that by far the greater number of these objects are worked in siliceous stones, such as hornstone, jasper, and other compact and cryptocrystalline varieties of quartz. For a few of the arrow-heads a translucent, milky *chalcedony* has been employed; and in one specimen the chalcedony is clouded with brown markings, due probably to the presence of oxide of manganese. Many of the arrow-heads are wrought in different kinds of *jasper*, which present red, brown, and yellow colours, and are in some cases banded, as in the well-known "riband jasper." But the material of which the greater number of these objects is composed should rather be called *hornstone* or *chert*, and in some specimens the stone might almost be taken for ordinary *flint*. Indeed, the mineralogical differences between some of these siliceous stones is extremely trivial. In flint the fracture is eminently conchoidal, whilst in chert it is rather more splintery; jasper is distinguished by its opacity, most of the other forms of silica being translucent at least on the thin edges; between hornstone and chert there is really no essential point of difference. Many of these siliceous stones occur as nodules and bands in limestone rocks, such as the flint of the Chalk, and the chert of the Mountain Limestone; whilst chalcedony and jasper, and

their mixtures, forming agates, are found in basalts and similar eruptive rocks, where they occur either as veins or, more commonly, in vesicular cavities, giving an amygdaloidal character to the rock which contains them.

Not a few of these arrow-heads are worked in those fine-grained, nearly black stones, which are at all times difficult to determine without the aid of the microscope. Some of these are certainly fragments of *basaltic rocks*; others may be dark-coloured *felstones*; whilst others again appear to be flinty-jasper, or *Lydianite*.

It is believed that the materials in which these objects are wrought have been derived from pebbles scattered over the surface of the country in which they are found. According to Mr. Darwin, the country around the Rio Negro forms a plateau of old Tertiary sandstone, capped by a bed of gravel ten or twelve feet thick, consisting of pebbles of porphyritic and quartzose rocks. Prof. Burmeister states that the pebbles of which the Rio Negro arrow-heads are formed are brought down by the river from the Cordilleras.

DISCUSSION.

Mr. Ex-Consul HUTCHINSON remarked that the observations made with reference to the gravelly and sandy soil having no vegetation capable to sustain life, and hence no means of supporting inhabitants, could not be applied to Patagonia any more than to Peru. He had travelled over scores of miles in the latter country where there was not a blade of grass nor a drop of water; the ground all sand and rocky detritus,—mountain and valley. Yet the earth was literally carpeted with bits of broken crockeryware, and ruins of walls, thus proving that the places had been formerly inhabited. It was to him one of the most puzzling things even to guess how the people could have lived in those times spoken of. As regards the Patagonians being a race of giants, he had read a paper* before the Ethnological Society (Professor Huxley, F.R.S., President, in the chair), "On the Tehuelche Indians of Patagonia," in which he submitted photographs of some of these (whom he had conversed with in Buenos Ayres), and proved that they were not a race of giants. The testimony of Mr. Jones, the Welsh Missionary at Chupat, was also given in corroboration: and as these Tehuelches were the tribe of Patagonians described by Magellan as gigantic, this must be classed with other dead myths and buried fables. It appeared to him that the strangeness on which Colonel Lane Fox commented, in regard to the arrow-heads of Patagonia being similar to those found in the United States, was not more remarkable than that the mounds, explored by Messrs. Squiers and Davis, in the valleys of the Ohio and the Mississippi turned out

* *I*vide 'Transactions of the Ethnological Society,' vol. 7, page 313.

items of prehistoric anthropology nearly the exact counterpart of those he had excavated in Peru, and which were now being exhibited at the Bethnal Green Museum. He had never found arrow-heads in Peru, but he had seen bows and arrows reported to have been obtained at Arica. In the mounds examined by him the weapons there were clubs, together with slings; and the Institute would remember that when reading two papers last year* he had shown some skulls on which the marks of sling-shots were visible. The weapons of the ancient South Americans on the eastern side of the Andes were as yet little known. At the period of the Spanish invasion the first town of Buenos Ayres, erected by Mendoza, was destroyed by the Guaraní Indians (who at the time counted some millions in the country) throwing fire-balls on the houses, which latter were made of wood. The bola was not a general South American weapon. At least now-a-days it is confined to the plains of the Pampas, and Gran Chaco, in the Argentine Republic. Even there it is not used as a fighting weapon, but for the purpose of the chase. Horses, cows, and ostriches are brought down by the Gaucho with flinging the bolas. He was sorry to add, although not making it a *post hoc ergo propter hoc* style of argument, that with the decrease or gradual disappearance of the huanacos, as mentioned by Colonel Lane Fox, so the Tehuelche Patagonians, whose only clothing was the skin of a huanaco, were likewise dwindling away, as were indeed all the primitive Indian races of South America.

Mr. MONCREU CONWAY said that, although he could only bring the eye of a layman to bear on the specimens, it might possibly interest Colonel Lane Fox for him to say that he recognised in the American collection two arrows—the white ones—as of a kind which it was not uncommon to pick up in the northern part of Eastern Virginia, where he (Mr. Conway) was born. It was a region over which Powhattan, the famous Indian chief, whose daughter Pocahontas was associated by legend with the name of the discoverer of Virginia, had reigned. It was considered by boys a matter of importance to get hold of such arrow-heads for their arrows, and they believed that an arrow so tipped would go farther and truer than with the ordinary ferrule. There was also an orthodox way transmitted of tying them in, catgut being used, and the arrow-head being sunk quite deep in the split of the arrow.

Mr. HYDE CLARKE remarked that Colonel Fox had not unduly dwelt on the importance of minute details. These in some cases became characteristics of race, and evidence of a route of migration. The same observations applied to words, the application of which was too much neglected by anthropologists. The researches of the author, and the application of a classification of development to the museum, were labours in a right direction, which would bear great fruits. The observations of Colonel Fox on the distribution of the boomerang supplied a correction to Darwin's "Descent of Man," i. 183, and in this he concurred on the conjoint evidence of

* *Ide 'Journ. Anthropol. Inst.,' vol. 3, page 311.*

philological facts. With regard to the suggestion that the distribution of hunting weapons might be affected by local influences, it was not only the case that the guanaco was driven back by the failure of its fodder, but in Australia the sheep, by destroying the kangaroo grass, and causing other grasses to spring up, were driving back the kangaroos. It was well known to many of them, as travellers, that in various parts of the world the practice prevailed of burning forest and scrub to favour the growth of tender-growth, and it was probable that this easy destructive process always took place where pastoral tribes took possession of a district. Thus, while hunting became less necessary by the supply of other animal food, the harbour for the beasts of chase would likewise be destroyed: at the same time the cover for birds would also be destroyed. Thus weapons for the chase of small beasts and birds would go out of use, and those alone would remain which were needful against lions, leopards, or wolves terrifying the herds.

MR. JEREMIAH remarked that what was now required to advance the study of Prehistoric Archaeology was a philosophical generalisation of the results of the explorations in North and South America, with a view to a clearer comprehension of the problems presented to us by the antiquities of the northern, central, and southern divisions of the New World. He referred to the tradition that the stone arrow-head, or celt, was long considered in the British Isles to be a thunderbolt. It was Mr. Martin, in his "Philosophical Grammar," published in 1738, who, he believed, first gave a rational explanation of the origin of that popular error. They are also known as "elf-shots" here, and in Scandinavia and other parts of Europe. He thought it important to collate the traditions relating to stone weapons; in fact, as far as our knowledge has gone, much good has already accrued to archaeology. It would be interesting to know whether there was any tradition or remnant of folk-lore of this description relating to stone weapons of South America.

MR. PARK HARRISON and the PRESIDENT also joined in the discussion, to which the author replied.

The author read the following report:

REPORT on the DEPARTMENT of ANTHROPOLOGY at the BELFAST MEETING of the BRITISH ASSOCIATION for the ADVANCEMENT of SCIENCE, 1874. By F. W. RUDLER, one of the Secretaries of the Department.

ALTHOUGH it can hardly be said that the Belfast meeting was marked by any strikingly important contribution to Anthropology, it must yet be admitted that the list of papers communicated to the department was sufficiently full and varied to fairly represent most branches of our science. After reject-

ing two or three papers which dealt with subjects beyond the scope of Anthropology, and transferring some others to sections where they might be more appropriately discussed, the committee found itself in possession of no fewer than five-and-twenty communications, giving fair promise of a successful session. Nor was this promise disappointed. During the five days on which the department sat, the crowded meeting-room day after day testified to the interest which was uninterruptedly sustained in our proceedings.

One of the lecture-rooms in the Queen's College was appropriated to the use of the Anthropologists, but it was perhaps to be regretted that this was situated at some little distance from the anatomical class-room in which the sectional committee met, so that when this body resolved itself each morning into the sub-committees representing the three departments, a general migration of the Anthropologists took place to their own rooms across the college green. It is clearly a matter of convenience to accommodate, if possible, the several departments of the section under the same roof.

Dr. Redfern, Professor of Anatomy and Physiology in the Queen's College, Belfast, presided over the section of Biology, whilst Sir William R. Wilde, of Dublin, occupied the chair in the department of Anthropology. The list of vice-presidents of the section included, in addition to Sir W. Wilde, the names of Col. Lane Fox and Professor Rolleston as representatives of our science; whilst Mr. J. J. Murphy, of Belfast, and the reporter, acted as secretaries. The following is a list of the members of this Institute who were present at the Belfast meeting:—Sir George Campbell, Sir Walter Elliot, K.C.S.I., Colonel A. H. Lane Fox, F.S.A., Sir G. Duncan Gibb, Bart., M.D., Sir W. Vernon Guise, Bart., F.G.S., Dr. Hooker, C.B., P.R.S., Mr. Consul Hutchinson, F.R.G.S., Professor T. H. Huxley, LL.D., F.R.S., Sir John Lubbock, Bart., M.P., F.R.S., Rev. J. McCann, D.D., Mr. M. Moggridge, F.G.S., Dr. H. Muirhead, Dr. P. O'Callaghan, F.S.A., Mr. J. S. Phené, F.G.S., Captain Bedford Pim, R.N., Dr. W. F. Ramsay, Mr. F. W. Rudler, Mr. W. Spottiswoode, F.R.S., and Mr. R. H. Tidde-man, M.A.

It was arranged between the three departments of the section that not more than a single address from the chair should be delivered on the same day; and that during the delivery of the address in one department proceedings should be suspended in the others. In accordance with this arrangement, Professor Redfern opened the proceedings on Thursday morning with an address to Section D; Dr. Hooker on the following day delivered his discourse to the Department of Zoology and

Botany; and on the Saturday morning Sir William Wilde addressed the Department of Anthropology. In order to present a faithful record of the proceedings, it is desirable to notice the several papers in the order in which they were read, and consequently this address will be duly noticed among the Saturday's proceedings.

When the Anthropologists had assembled in their own room on Thursday morning, after the delivery of Prof. Redfern's address, the business of the department was opened by Mr. Consul Hutchinson's paper "On the Anthropology of Prehistoric Peru." It is unnecessary to enter into an analysis of this communication, as the members of the Institute will probably have an opportunity of hearing it read during the present session. The author expressed his belief that the original occupants of South America—notably those of Peru—may have been the very oldest people on the American continent. He deplored our ignorance of the history of Peru previously to the time of the Incas, and referred to the popular errors traceable to the romantic stories of the early Spanish chroniclers. Many of the prehistoric ruins were described, special reference being made to the old burial-mounds and their contents. A comparison was drawn between these mounds and those of the Ohio and Mississippi valleys, and a similarity traced between the process of inhumation used by the early Peruvians and that practised in prehistoric times in Ireland. The paper was illustrated by a large number of interesting photographs, diagrams, and sketches, representing many of the ruins of prehistoric Peru, and including some of the antiquities in the author's collection, now exhibited in the Bethnal Green Museum. These diagrams, after the reading of the paper, were transferred to the temporary museum placed under Mr. E. Ray Lankester's charge. This plan was followed throughout the meeting; whenever diagrams or specimens had been used in illustration of a paper, they were transferred as soon as possible to the museum, where they might be studied at leisure, day after day, until the meeting was broken up. So obvious were the advantages of this arrangement that it is to be hoped the experiment so successfully made on this occasion may be repeated at future meetings, and that contributors of memoirs may be induced to send such illustrations as will increase the value of their communications and contribute to the success of the gathering.

Anything bearing upon the ethnology of our own islands is sure to be popular, and a lively discussion was consequently excited by Dr. Beddow's paper "On Modern Ethnological Migrations in the British Isles." In the present day we witness an extensive migration of our people executed peaceably,

gradually, and by individuals and families rather than in mass. As a rule, these migrations take place from poor to rich districts, from hill to plain, from country to town, from ill-employed to busy centres, and from healthy to unhealthy districts. In England a constant stream of population sets towards the capital. In Scotland two currents may be traced—the one tending towards England, and the other towards Glasgow. The net result of such migrations is to strengthen the Keltic element in our large towns. Thus, Glasgow receives a rapid influx of Irishmen and Highlanders; Liverpool attracts great numbers of Irish, Welsh, and Scotch; whilst Irish blood may be found abundantly in Manchester, and in most of the colliery districts of the North of England. In London the relative number of Irishmen is not large, whilst in Bristol it probably does not exceed three per cent., and this in spite of the easy communication with Munster. In fact, the effect of mere geographical proximity is often overborne by other causes which influence ethnic migrations. In Ireland the great focus was formerly Dublin, but of late years Belfast has become the chief centre of attraction.

At previous meetings of the Association Sir Duncan Gibb had brought forward no fewer than nine examples of centenarians, whose physical condition he had personally examined. On the present occasion he read a paper "On Longevity at Fivescore eleven years," in which he detailed the evidence by which he had become convinced that Mrs. Elizabeth Leatherlund, of Tring, in Hertfordshire, had attained to the age of one hundred and eleven years last April. On a careful examination of the old lady, the author had marked a general absence of senile changes in the tissues. The heart, the lungs, and other internal organs were still perfectly healthy, and the epiglottis was erect, as in the other centenarians previously examined.

As might be expected, a good deal of interest, both scientific and popular, has been excited by the two boys who have recently been brought to Italy as representatives of the Akka dwarfs described by Dr. Schweinfurth. It is alleged that these children were given by King Munsa to the Italian traveller Miani, after whose death on the White Nile they were taken on to Cairo by a Dinka soldier. At Cairo they were examined by Professor Owen, and by Professor Carniola of Milan, and were afterwards conveyed from Egypt to Italy by Professor Panceri, of Naples. A short vocabulary obtained from these boys has been forwarded to Mr. Hyde Clarke, and, at the request of the Italian Geographical Society, he has sought to determine the relations of this language. In "A Preliminary Note on the Classification

of the Akka and Pigmy Languages of Africa," Mr. Clarke gave us the result of this inquiry. He finds that the language is not related to the languages of the Bushmen, the Mincopies, the Fuegians, the Shoshoons, and other short races, but that it conforms to that of the Obongo discovered by Du Chaillu in West Africa. As the ancients had referred to pigmies in India as well as in the Nile valley, the author had made a special examination and found traces of Akka and Obongo among the Garoos, the Nagas, the Gadaba, &c. Moreover, the African types were distinctly traceable in languages related to the Carib in South America. It is evident, however, that the shorter races and their languages are mixed up with those of more powerful peoples.

In a "Note on Circassian and Etruscan," Mr. Hyde Clarke gave the result of some further researches on the affinities of Circassian with certain American languages. He found that it was closely related to the Otomi, Tarahumara, Cora, and Huasteca of Mexico. The author regarded the Etruscan as distinctly Sumirian on the evidence of its words, its grammatical forms, its numerals, its mythology, and its topographical names.

Friday was devoted, as far as possible, to papers bearing upon the Ethnology of India. After Dr. Hooker had delivered his address to the Department of Zoology and Botany, the Indian programme was opened by Mr. Drew's paper "On the Distribution of the Races of Men inhabiting the Jummoo and Kashmir Territory." The author had resided for several years in this district; and although his attention had been chiefly directed to geological studies, ethnology had by no means been neglected. Four races of Aryan origin, found in the basins of the Chinab and Jhelam rivers, were described in detail: these were the Dogras, the Paharis, the Kashmiris, and the Chibhalis. The author also noticed the Dards, whom Dr. Leitner described some time ago, and three Thibetan peoples, known as the Champas, the Ladakhis, and the Baltis. The physical features of each of these peoples were illustrated by large cartoons, and by a good series of photographs, whilst their distribution was clearly traced upon a large map, coloured ethnologically.

One of our members, Mr. M. J. Walhouse, contributed an interesting paper "On a Leaf-wearing Tribe on the Western Coast of India." During the author's long residence at Mangalore he had ample opportunity of studying the small tribe known as the Korāgars. Among the peculiarities of these people may be mentioned the fact that many of the females wear screens or aprons woven of twigs and green leaves, with

which they cover the buttocks. As this covering is worn over the clothes, it is, of course, of no possible use; but it represents the survival of an ancient custom which was at one time universal in the tribe, and is said to have been a badge of servile degradation. The custom appears to be dying out, and Mr. Walhouse did well to put it on record before it becomes extinct.

Some further observations "On the rude Stone Monuments of the Khasi Hill Tribes" were contributed by Major Godwin-Austen. He described in detail the monoliths standing in the village of Nougshai, near Shillong, and the cairns in the Khasi hills, which had not been previously noticed.

It was to be regretted that engagements in other sections prevented Sir George Campbell from coming into our department until late in the day. A good audience, however, was still present to hear the excellent address which he delivered "On the Peoples between India and China." Sir George dwelt upon the Chinese characters exhibited by the Eastern tribes lying between and partly covering the Himalayas. About Darjeeling most of the people speak Thibetan languages, but exhibit decidedly Chinese features in their civilisation; the Garoos, too, hold many customs akin to those of the Chinese, and the Kookees, about whom so much was learnt by the Looshai expedition, are undoubtedly a Hindoo-Chinese tribe. Reference was also made to the Nagas and the Khasi hill tribes, and considerable amusement created by a description of the position which women occupy among the Khasis. The woman stands at the head of the family; property descends in the female instead of the male line; and in fact the positions of male and female are completely reversed, the woman enjoying full social rights, but at the same time taking the burden of all the work.

After Sir G. Campbell's address had been delivered, a paper was taken "On the Agaw Race in Caucasia, Africa, and South America," by Mr. Hyde Clarke. The author gave a detailed account of this family of languages, as one which denoted a general migration throughout the world. After examining the Abkhass of Caucasia, he passed to the Nile region, and compared the language of the Agaw with that of the Falasha, or Black Jews, whilst in India he referred to the Kajunah and Gadaba as being possibly allied. Then tracing the migration across the Pacific, he showed that the language is widely spread, under the names of Guarini and Omagna, in Brazil and Paraguay. Finally, he suggested that some of the earlier river names, both of the old and the new world, may be referred to the Agaw.

Whilst Saturday was more or less of a holiday to several of the sections, it was one of the busiest days to the anthropologists. It was indeed on Saturday morning that Sir William Wilde delivered the address which, in the usual order of things, would have been given at the opening of the proceedings. After paying a graceful tribute of respect to Professor Phillips, to whom Anthropology, like most other sciences, was indebted, Sir William touched lightly upon several subjects of interest to anthropologists, such as the probable existence of an age of copper prior to that of bronze; the latitude with which the term "prehistoric" is used; the educational value of museums, and the necessity of arranging every collection according to some scientific plan. Turning from these prefatory observations, Sir William addressed himself to the task of tracing the history of the peoples who have successively occupied Ireland, and the representatives which they have left in the present population. When prehistoric man first set foot on the Land of Erin it is of course impossible to say, but Sir William believes that it was not until after the extinction of the mammoth and the reindeer, probably of the musk-sheep, and perhaps of the "Irish elk." Much of the early history of Ireland, as recorded by annalists, is of a very legendary character; but Sir William believed that the story of the Grecian hero, Partholon, who is said to have landed in Dublin Bay and occupied the Hill of Howth, has received striking confirmation by archæological investigations in the locality. Passing over the Femorians, the Nemedians, and other invaders whose names figure in the early annals of Ireland, Sir William proceeded to describe the Firbolgs, the Tuatha-da-Dannans, and the Milesians; three peoples who are said to have successively conquered and occupied Ireland. He described in detail the physical and social characters of those ancient peoples, as recorded by the Irish annalists, and expressed his opinion that they all belonged to a common Keltic stock, their modern representatives being found in the Irish-speaking population of the present day. Sir William also referred to the ethnological influence exerted upon the Irish by the incursions of the Norsemen, and by the subsequent Anglo-Saxon invasion; and coming down to more recent times, alluded to the effect of the English and Scotch settlers in Ireland, especially in the province of Ulster.

At the conclusion of this interesting address a general exodus was made from the anatomical lecture-room, in which it had been delivered, to the anthropological meeting-room, where the Rev. Canon Hume, of Liverpool, proceeded to discourse upon the "Origin and Characteristics of the People in Down and Antrim." In tracing the history of the people who occupy

both sides of the valley of the Lagan, he passed over the early history of the district, and, commencing with the plantation of Ulster, showed the positions taken up by the three great elements of the population, the English, the Scotch, and the Irish. The manners and customs of these people were compared and contrasted, and the origin and distribution of certain local and personal names were traced. Attention was directed to the language of the district, which, down to 1820, had been three-fold, and to the distribution of religious creeds, a subject which was illustrated by a body of statistical information. Finally, the Canon sought to show that the rivalry caused by these various elements of population had not been an unmixed disadvantage to the district.

Following immediately upon the discussion of this paper came another communication of much local interest by Mr. Hyde Clarke. In a "Note on the River-Names and Populations of Hibernia, and their relation to the Old World and America," the author showed that reference to a Keltic, or even to a Phœnician origin was insufficient to explain many of the Irish river-names. In fact, the forms of such names in these islands are not confined to the West, but occurred in ancient India, and elsewhere. Thus the *Sennus* (*Shannon*) may be compared with the *Sinnus* of Italy, the *Arsinos* of Greece, and the *Sonns* of India. Moreover, many of the British and Irish river-names may be strictly paralleled with certain South American names; for example, the *Sennus* conforms with the *Sinu* of New Grenada. Such words, so far from being strictly Keltic, must be referred to a widely-spread system of nomenclature common throughout the ancient civilised world, and Mr. Clarke has been led to refer them to that early period of culture represented by the Sumir and Accad of Babylonia, which he distinguishes as the Sumirian.

Most of the communications brought forward on Monday bore upon questions of Prehistoric Archaeology. "A glimpse of Prehistoric Times in the North of Ireland" was the title of the first paper; a paper in which Mr. W. J. Knowles, of Cullybackey, described a recent find of worked flints at Port Stewart, in the co. Derry. The objects were obtained from some pits hollowed out by the wind among the sand-hills near the mouth of the river Bann. Mr. Knowles had collected great numbers of scrapers and arrow-heads of flint, hammer-stones of quartzite, and fragments of coarse pottery, associated with the bones and teeth of the horse, the ox, and the dog, and with marine shells of recent species. These objects have been derived from certain blackened layers, representing the old surface on which the flint-using people once lived, and which is now covered with

deposits of sand from ten to thirty feet in thickness. The flint implements appear to have been fashioned out of rolled flints collected on the shore; but the author thinks it likely that mining operations were carried on in the hard chalk, in order to obtain flint for the manufacture of implements and weapons; and from the fact that the chalk in Ireland is confined to the north-eastern corner, it seems probable that this district was the chief centre of Irish flint-working.

In continuation of a subject brought forward at Bradford, Mr. Phené read a paper "On an Age of Colossi," illustrating his subject by a large collection of beautifully-executed drawings and photographs. The author adduced a number of illustrations of similar customs among the Egyptians, the early inhabitants of America, and the Chinese, and argued in favour of the common origin of these widely-separated peoples. Drawing a parallel between the colossal monuments along the banks of the Nile and those of the Mississippi valley, he suggested a relation between the religious ideas of the early inhabitants of the two countries. In China we find, instead of human colossi along the margin of rivers, huge figures of animal forms bordering the sinuous roads which lead to the tomb-temples. Attention was called to the Wilmington giant, mentioned by Mr. Phené last year, and to some other human figures of colossal proportions in our own islands.

Bearing upon this subject was another paper by Mr. Phené, entitled "On Natural Mythology, and some of the incentives to its adoption in Great Britain and Ireland." The author cited a number of instances of the mythological impersonation of natural objects, and exhibited drawings of rocks in various parts of the world, which exhibit accidental shapes curiously suggestive of the human face. He conceived that veneration for these natural objects would lead to the selection of their localities for the celebration of religious rites, and for the burial of the dead; and he believed that these semblances of the human form would ultimately come to be identified with the dead, and the locality would thus be regarded as the abode of some divinity.

Reverting to the papers of local interest, we may note a communication from Mr. W. F. Wakeman, "On Irish Crannogs and their Contents." The word *crannog* (connected with the Irish *crann*, a tree) is applied to those islands, altogether or partly artificial, which have been inhabited in many of the Irish lakes. The crannog was either oval or circular in form, and the margin was strongly staked with piles of timber, whilst the whole was enclosed by rows of palisading for purposes of defence. A loghouse, or more than one, might generally be found

within the enclosure. Wooden boats, stone and bronze implements, and coarse pottery were commonly found in these islands, and they have also yielded vast quantities of animal remains; thus, not less than 150 cart-loads of bones were obtained from a crannog at Lagore, near Dunshaughlin, in the county Meath. These bones, having been submitted to Professor Owen, were found to represent the *Bos longifrons*, the pig, red-deer, sheep, goat, dog, horse, and ass. It is clear, from the character of some of the relics, that the crannogs may be as old as the neolithic and bronze ages; but it would appear that they continued to be occupied to a much later date, and many of these secluded island-dwellings have down to modern times been the favourite localities for the distillation of *potheen*.

A general account of the "Distribution of Worked Flints in the Counties Antrim and Down" was given by Mr. William Gray, and illustrated by a large number of specimens. The author defined the various types of implements, and noted the special localities within this area where each form had been discovered. As secretary of the Belfast Naturalists' Field Club, Mr. Gray was in possession of much local information, which was freely given to our members. It would, indeed, be a flagrant injustice to the members of this club to omit mention of the valuable aid which they rendered to the Association in general, and of the liberality with which they distributed an excellent Guide-book, prepared for the occasion by several members of the club, and containing much local scientific information, including chapters on Ethnology and Archæology. The club also deserved well of the anthropologists for bringing together an interesting collection of Irish antiquities, temporarily exhibited in the Ulster Hall, to which members of the Association were freely admitted. Nor should it be forgotten that the Belfast Natural History and Philosophical Society distributed copies of a catalogue of skulls, and casts of skulls, collected from various Irish sources by the late Mr. John Grattan, and now the property of the society, in whose museum they are exhibited.

On Tuesday, the last day on which the Anthropological department sat, Sir William Wilde was unavoidably absent, and the chair was occupied during the day successively by Sir John Lubbock, Colonel Lane Fox, and Sir Duncan Gibb. The proceedings commenced with Colonel Fox's report "On the Anthropological Notes and Queries for the Use of Travellers." It will be recollected by our members that this committee was originally appointed at the Brighton meeting, and that at Bradford it was re-appointed, with a grant of £50 towards the expense of publishing the work. Colonel Lane Fox laid before the Belfast meeting some advance copies of the neat little

volume which contains these instructions, of which he gave a succinct analysis. It is satisfactory to know that the committee has been re-appointed, with a grant of £20 to cover certain additional expenses which are likely to be incurred by a larger issue than was originally contemplated. We may fairly expect that this little volume will soon be widely distributed to our consular agents, naval officers, missionaries, and other travellers, from whom it seems likely that much useful information will thus be obtained on subjects which might otherwise escape observation.

A paper which had been read in the Geological section was fairly brought into our department by Mr. R. H. Tiddeman, relating as it did to the discoveries in the Settle Caves. As the human fibula, which formed the principal object of discussion in this communication, has already been brought before the Institute by our President, it is unnecessary to make further allusion to it; but it is gratifying to know that the work of the Settle Cave Exploration Committee will be continued, and that the Association has aided it by renewing the grant of £50. In connection with this subject it may be remarked that the committee for exploring Kent's Cavern was also re-appointed, and that a grant of £100 was voted for the continuation of their useful work.

One of the secretaries of the department, Mr. J. J. Murphy, offered "Some Remarks on Mr. McLennan's Theory as to Primitive Marriage." Whilst admitting that the institution of marriage might be traced back to the practice of bride-stealing, the author differed from Mr. McLennan in believing that the impulse to this theft arose, not from the scarcity of women consequent upon the practice of female infanticide—a practice which would tend to the extinction of the tribe who followed it—but partly from the desire of each man to possess a wife of his own, which in primitive times could only be the result of capture, and partly to an instinctive impulse to mix the race. The paternal authority introduced by marriage would give social cohesion to the tribe, and thus secure for it an ascendancy over neighbouring tribes, which would tend to the dissemination of its customs.

A paragraph had appeared in the local papers to the effect that a meeting would be convened to discuss the advisableness of establishing a Psychological department or sub-section, or at least a Psychological society in semi-official relation with the Association. This movement originated with one of our members, the Rev. Dr. McCann, of Glasgow, who had applied to the chairman of the Anthropological department for the use of our rooms in Queen's College for the purpose of holding the

meeting. As it was clearly beyond the power of our committee to grant this request, it was decided that the best way of giving publicity to the subject would be by reading a paper in our own department. Accordingly Dr. McCann brought forward a communication "On the Methods of a Complete Anthropology," in which he defined this science as the study of all the phenomena of man, and urged upon anthropologists the necessity of paying greater attention to mental science. Whilst admitting that psychological subjects enter to some extent into our programme, the author maintained that sufficient opportunity was not afforded for men of opposing schools of thought to discuss the points of difference between them. The subsequent discussion seemed to show that the general feeling of the meeting was against the establishment of any additional subsection, but that the Anthropological department, as at present constituted, was competent to receive and discuss all papers on scientific psychology, excluding, of course, theological controversy.

It is to be hoped that papers of solid merit on psychological subjects, treated scientifically, may in due time be received through the aid of our Psychological Committee; and that we may thus show that the Institute, at any rate, has not lost sight of this phase of our many-sided science.

Our former director, Mr. C. Staniland Wake, contributed a suggestive paper "On the Origin of the Moral Idea." Although it is true that among even the lowest savages such actions as theft, murder, and adultery are regarded as crimes, yet they are not considered as "immoral" in the sense in which that term is understood by us, since it is only under certain conditions that such actions meet with disapproval. According to the author, the fact that these actions are regarded as wrong may be traced to the idea of personal right arising from the activity of the instinct of self-preservation. Interference with acquired property would be resented as wrong, and the idea of right connected with such property might eventually be transferred to others possessing similar property. The "rights of the dead" were recognised by all primitive peoples, and the neglect of these rights would incur the displeasure of the inhabitants of the spirit-world. If it came to be supposed that theft, adultery, murder, and the like were displeasing to the spirits, these actions would soon be viewed as immoral. The author believed that the active virtues, such as benevolence, which would not appear until after the development of the negative virtues, might be traceable to the maternal instinct, and this in turn to the sexual instinct, which accompanies that of self-preservation in animals of even the lowest grade. The

union of these instincts, according to the author, formed the true basis of morality.

In a paper "On the Degeneracy of Man," the Rev. J. Edkins, of Peking, laid down the postulate that whilst civilisation tends to advance on continents it degenerates on islands, and, consequently, we may expect to find races inhabiting continents to be more highly civilised than those on islands at a great distance from the mainland. Assuming Asia to have been the birthplace of the human race, the writer sought to show that the inhabitants of Polynesia, America, and Africa were degraded Asiatics, whilst Europeans were developed Asiatics. Illustrations which the author believed lent support to his argument were drawn from various parts of the world, but especially from China; and his familiarity with this country, its people, and its literature, gave considerable value to his remarks on the history of Chinese civilisation.

Last on the list of papers was a note from Mr. Hyde Clarke "On the Phœnician Inscription of Brazil." Reasons were given for doubting the authenticity of this inscription from internal evidence. It seems most improbable that King Hiram should have despatched an expedition to America from Eziongeber, on the Red Sea. A knowledge of the Atlantic and Pacific Oceans, Australia, and North and South America, might be found in the earliest stages of learning in Babylon, and was distinctly taught in the doctrine of the Four Worlds by the School of Pergamos. This knowledge lingered in traditions among the Greeks and Romans, and was accessible to the Phœnicians. It seemed, therefore, probable that Hiram would have sent his expedition from Tyre or from Spain, rather than from the Red Sea.

The preceding analyses of the papers read at Belfast, though brief, sufficiently indicate the general character of the proceedings. It is matter of congratulation to the Institute that the more important of the papers were contributed by our own members, and, indeed, it is from their exertions that the department must always gather its chief elements of strength. It is, therefore, to be hoped that a greater number of our members will seek to forward the interests of the department, and, consequently, of the science which it represents, by the contribution of suitable memoirs, and, if possible, by their personal attendance. But if the last meeting, labouring under the disadvantage of distance from the metropolis, was sufficiently supported to maintain its position and popularity, it may be fairly anticipated that a yet fuller measure of success will attend the Bristol meeting of 1875.

Mr. HYDE CLARKE read a Report on the Ethnological section of the Congress of Orientalists:

REPORT *on the* ANTHROPOLOGICAL SECTION *of the* INTERNATIONAL CONGRESS *of* ORIENTALISTS. By HYDE CLARKE, Delegate for the Anthropological Institute.

THE Congress of Orientalists, which was last year instituted at Paris, held its second meeting this autumn in London, and will have its third yearly meeting in St. Petersburg. The importance of the Association rendered it desirable that the Institute should be represented, and I acted on behalf of the Institute, with the sanction of the President, Professor Busk, and was supported by Mr. Brabrook, our Director, and Mr. Park Harrison, Member of the Council. In the desire to promote the objects of the Congress on the occasion of the meeting proposed to be held in the rooms of the Royal Society of Literature, an invitation to visit the collections of the Institute was addressed to the members, and a selection of Oriental skulls and other illustrative objects was arranged, chiefly under the direction of Mr. Park Harrison.

These measures, however, proved abortive in consequence of the want of ordinary organisation, which marked and marred the proceedings of the Congress. Thus, too, the Anthropological section proved a disappointment like all the others. Distinguished men were collected from all parts of the world, including many eminent members of this Institute, but the communication of their knowledge could not be obtained, nor was there any discussion. Although the Congress was, on paper, divided into six sections, yet, contrary to usage, each section held only one sitting, of which half the time or more was devoted to the address of the President, and the hour or three-quarters of an hour remaining was occupied by one speaker. Prof. Owen delivered a very valuable address on Egypt, the chief portions of which the members of this Institute had the advantage of hearing on the 9th of June, as well as of seeing the illustrations. As the members of allied scientific societies were not allowed in the customary way to sit on the committees of sections, no adequate preparation could be made for the section of Ethnology, and no defects could be remedied.

The result is the more to be regretted, as there was a good disposition to show hospitality to the members; the meetings were well attended, and the daily papers devoted long notices to the proceedings, so that an extent of popular interest was excited which might have been productive of much benefit. The number of subscribers, it is to be regretted, is so limited that the volume of Proceedings, to be published at some remote

date, is expected to be small, and will bear no comparison to the magnificent volume of 1873, produced by our French brethren, and to which they have the sagacity still to invite subscriptions.* By the narrowness of funds, another object of the Congress, in the permanent record of its proceedings, is frustrated. This will, to some extent, be remedied by the enterprise of our fellow-member, Mr. N. Trübner, who has already produced, as a part of the "*Oriental Record*," a very full account of the transactions.† He has likewise been active in arranging with Messrs. Maule, of Piccadilly, for the execution of a series of photographs of distinguished members of the Congress of Orientalists, which is already extensive, and includes several members of our Institute. By the help of Mr. Trübner's compact volume, I proceed to offer a few notes.

Prof. Oppert offered an explanation of his views on the Ethnology of the Medes. He is of opinion that the Medes were non-Aryan; that the language of the cuneiform called Accad is Median; and that the Persian names we have of Median kings are only Persian translations. "The two dynasties of Media and Persia were quite different in race and religion; the accession of Cyrus marks that of the Aryans and the Mazdeism" (Trübner, p. 7).

Our member, Sir Walter Elliot, presided over the section devoted to language in general, unscientifically named, by the Sanskrit sect of philologists, Turanian. Unwilling, like the other chiefs of sections, to absorb the small time allotted for the work of the section, Sir Walter delivered but few observations, reserving for the volume his view of the relation of the non-Aryan languages of the East.

The Rev. Isaac Taylor, in the Turanian section, gave a view of the relations of Etruscan and the Accad of Babylonia (p. 10). These were referred to by me in my paper, last session, "*On the Early Culture of America*," and the adoption of such view prepares the way for his retreat from the hypothesis of the Finnic classification of the Etruscans. It is well to observe that there are in Accad relations to Finnic. The failure of Dr. Corssen's attempt to make the Etruscan language Aryan will compel the philologists to pay more attention to the ethnological and mythological elements, and may result in modifying the influence of Aryan comparative mythology, establishing its antecedents as a development of prehistoric mythology.

Dr. Leitner read a paper on Dardistan (pp. 10-47). This is a subject which he had brought before the Institute last

* The subscription of ten shillings, for 1873, can still be paid to myself, as delegate.

† Trübner & Co., Ludgate Hill Price 3s. 6d.

session. The Congress had drawn together a distinguished body of Chinese scholars, but with small result. Those eminent authorities, M. Leon de Rosny (p. 52), founder and last year's President of the Congress, and the Rev. Joseph Edkins (p. 9), entered their names to deal with the important subject of the origin of Chinese writing, on which short papers are published by them (p. 120). The discussion of this matter would have thrown light on the general origin of writing in Egypt, Babylonia, and China, all of which have features in common.

A casual conversation on the origin of the tones in Chinese abruptly closed. When it is observed that in Egyptian, some Caucasian, and other languages, there are also cases of several syllables being expressed by one idea, it is seen that in Caucasia differentiation is obtained by minute distinctions of vowels. According to Schiefner, the tones in Chinese serve the same purpose, even if they be not closely related in sound, while they have connections in gesture, which are derived from the branch of gesture-language dealt with by Mr. Tylor.

In the same Turanian section the Rev. Samuel Beal gave a paper on "Buddhism" (p. 12), and Professor Stenzler (p. 22) on "Expiation." The way in which the various doctrines, particularly that of Nirvana, are modified by the various nationalities, and which likewise received no full discussion, is an important phenomenon in comparative mythology, equivalent to what takes place with Christianity and Islam in a direct ethnological relationship.

In the Semitic section a paper of much interest and research was read by Brugsch Bey on the "Lake passed by the Israelites in their Exodus" (p. 28). In a work about to appear on Egyptian topographical names, and which includes 1,000, no less than 300 have double names. These are generally supposed to be Semitic, and that the shepherd kings were Semitic. Looking to the fact that Thebes and other names are not Semitic, but, as I have shown, Sumerian, it is likely that further confirmation will be obtained of the arguments of Professor Owen, delivered before the Institute, and renewed before the Congress, that there was in Lower Egypt a large and influential non-Egyptian population of Turanian character.

Mr. Grant Duff, M.P., presided over the Archæological section, and read an inaugural essay (p. 36) on the published Government reports.

In this section I was allowed to read a note on the "Connection of the Ancient River-Names of India with those of Etruria and Peru" (p. 39), in which I added some observations to those made before the Institute last session.

The Ethnological section was the last and unluckiest, being

snuffed out by the general meeting. Here (p. 42) Professor Owen read his discourse.

Dr. Forbes Watson had a short time for describing his proposition for the establishment of an Indian Institute in connection with the India Library and Museum (p. 46), which, among other subjects, will practically deal with Natural History, Ethnography, Sociology, Mythology, &c. This important proposal was well received.

Mr. Frederick Drew read a short paper on the "Castes of the Dards" (p. 53).

The special anthropological paper, that of Dr. Dobson, on the interesting topic of the "Andamans and Andamanese," was not read, but has since been transferred to this Institute.

The following report was taken as read:—

REPORT on the STOCKHOLM MEETING of the INTERNATIONAL
CONGRESS of ANTHROPOLOGY and PREHISTORIC ARCHEOLOGY.
By H. H. HOWORTH.

THE International Congress of Anthropology and Archaeology, which was held last August at Stockholm, was in every way a remarkable success; successful in attracting a very numerous body of distinguished men from various parts of Europe and America, successful in the very valuable papers that were read and the discussions which followed, and more especially successful in the admirable arrangements that were made for the entertainment and comfort of the visitors. The credit for these arrangements was largely due to the indefatigable zeal and energy of M. Hans Hildebrand, who is so widely known as an archaeologist, and of his companion, M. Montelius, whose works on the "Prehistoric Antiquities of Sweden" are equally admirable for their accuracy and the beauty of their illustrations.

Sweden is proverbial for its hospitality, and the influx of those who were interested in the stone- and bronze-folk, so dear to every Scandinavian soul, seems to have warmed even this proverbial hospitality into unwonted glow. The weather was very fine, and therefore the city, which is so often styled the Northern Venice, looked most charming. We were able to explore its environs with ease in the little gondola-like steamers which are the omnibuses of the Malar Lake, the lake of 1,200 islands.

The meetings were held in the old House of Peers. That stately body is now disestablished as a power in the State, but it still retains its palace for grand ceremonials. The grand

hall in which the meetings were held has its walls almost covered with small square escutcheons, each with the arms of some peer who has sat there, like those in the stalls at Windsor. Other rooms in the building were used for exhibiting, in table cases, the rare prehistoric objects that were brought by various members, for plans, &c. Among the latter the most notable were some shown by the Russian archaeologists, showing the distribution of prehistoric remains of various kinds in Finland and in Northern Russia, and also a most interesting series of drawings and lithographs of objects of the bronze and iron age found in various parts of European Russia, which are being published by the Russian Archaeological Society, that holds meetings in various parts of the Empire. This year the meeting-place is Kief.

The inaugural meeting of the Congress was held on Friday, the 7th of August, at 2 p.m., under the presidentship of Count Henning Hamilton, a distinguished Swedish diplomatist and man of letters, and a scion of the Scotch house of Hamilton, which has so largely recruited the aristocracy of Sweden. The business of this meeting was to elect the council, and to hear an inaugural address from the president. It is the rule for the vice-presidents to take the chair each day in order; and as they are chosen as representative men of different countries, this makes the chair a very international institution. The past presidents are, *ex officio*, also vice-presidents. M. Capellini, Professor of Geology at Bologna, to whose initiation the Congress owed its birth, took the chair, and, after a few remarks, vacated it to the president-elect, who bade the Congress welcome, and in a few appropriate phrases told us what had been done to entertain us. The council was then elected, and consisted of the following names:—Vice-Presidents, MM. Hildebrand, senior, Nilsson, De Quatrefages, Franks, Virchow, Dupont, Leemans, and Bogdanow; General Secretary, M. Hans Hildebrand; other Secretaries, MM. Montelius, Retzius, Chantre, Cazalis de Fondouce; Assistant-secretaries, MM. Stolpe and Landberg; Council, MM. A. Bertrand, Berthelot, Evans, Von Quast, Schaffhausen, Pigorini, Van Beneden, Engelhardt, Rygh, Von Duben, Aspelin, Lerch, Römer, and Whitney.

In the evening there was an entertainment at the pleasure-gardens in the outskirts of Stockholm, called Hasel Backen. This entertainment was provided by the municipality.

The real business of the Congress commenced on Saturday morning. The papers were read and speeches made from a tribune, and the language used was French. The first paper was by M. Torell, the superintendent of the Geological Survey of Sweden, and was supplemented by another by Baron Kurek.

These papers added the imprimatur of great authorities to the notion already current that there is no evidence of the existence of man in Sweden contemporaneously with the glacial mammals. The former shattered to pieces the evidence adduced by Sir Charles Lyell for the existence of a hut of the glacial period at Sodertelga, in Sweden. He showed the evidence had been somewhat misconstrued by Sir Charles, and that the facts which he took to prove upheaval and submergence were really the result of the slipping of a mass of talus. The general result of the discussion was that Sweden and Norway were at this epoch untenable, on account of the vast ice-sheet that probably covered them. I believe Mr. Evans and Mr. Franks, our two best authorities on the subject, are agreed that in Britain there is no evidence of palæolithic man having lived further north than Leicester.

Baron Kurch, who has made many researches on the early archaeology of Southern Scania, exhibited specimens of the earliest forms he had found, which corresponded to those of the Danish kitchen-middens.

M. Worsaae somewhat diverged from the question at issue in introducing the further question of whether there were not two divisions of the neolithic age in Scandinavia, one characterised by chipped, and the other by polished objects. He argued that there were, and seemed to infer that the polished implements were imported western forms, and that the art of making them travelled by way of Jutland.

Mr. Evans combatted this view most successfully, and showed that both forms are found together, and that chipped flints occur even later than polished ones. It is quite clear that the *raison d'être* of the two forms is the quality of the material. While flint and quartzite are readily chipped into form, arenaceous and other stones cannot be chipped, and must be polished, and this accounts for the presence of chipped flints in such abundance in Scania and Denmark, where flint is abundant, and their replacement further north by polished implements made from the basaltic and other indigenous stones. The reporter drew a parallel between the two forms and those found in New Zealand, which illustrate another reason for their separate existence. There also we have two stone ages—one of rude chipped implements, the other of polished jade ones. The former are found in the oldest ovens in connection with the bones of extinct birds, and were probably used by the race which preceded the Maories. When the latter arrived they had with them peculiar weapons made of bone, wood, &c. These they copied on their arrival in the beautiful material they found there, namely, the New Zealand jade, and to give

them the same external look they had to polish them. It is well known that there are found in Sweden a series of most beautiful stone axes, rare elsewhere, of a long pickaxe form, with beautifully worked sockets, ridges, and holes. These are classed by the Swedes as of the bronze age. A paper was read arguing that their finish and the construction of the holes was incompatible with their having been made with stone tools, while their forms were clearly imitations of metallic ones. This introduced the general question as to the age of the pierced stone axes, which are found so often sporadically, and so seldom with objects that might fix their relative age. Mr. Evans repeated his theory that the holes were made with hollow bones or horns and sand. Mr. Dixon suggests that they were bored with hollow reeds and sand. It is clear that many of them must have been made with a cylindrical hollow tube of some kind, either of metal, bone, or reed, for many are still found in Sweden with the holes partially occupied by little nipples, analogous to the stones taken out of boring tubes in digging mines.

After this discussion we had a paper by M. Zawiska on the finding of palæolithic objects, with mammoth and other remains, in Poland.

The meeting rose at half-past twelve, and recommenced at half-past two. The first paper was a geological one by M. Hamy, on the "Quaternary Deposits found in the Valleys of the Seine and the Somme;" after which we had a very interesting discussion on the sources whence the ancients derived their supply of amber. M. Stolpe enumerated the various sites where amber is found, and said it was generally distributed in the tertiary deposits of Poland, Galicia, and Germany—in greatest abundance on the shores of Pomerania, and also on the coasts of Friesland. It is only lately that attention has been much called to this latter district, and it is now pretty well settled that there were two distinct northern sources and two corresponding trade routes for the precious gum. One of these trade routes connected the Mediterranean with the shores of Pomerania, the other drew its supplies from the western shores of Jutland and the line of coast now forming the Friesic Islands, as far south as the Zuyder Zee; and M. Virchow told me that in a recent memoir that has appeared in Germany it is argued, with great probability, that this was the country of the Guttones, mentioned by Pytheas, and not the district of East Prussia, which has hitherto claimed that distinction. M. Wiberg threw much light on the direction of these routes, one by way of Jutland and the Elbe, the other by way of the Oder. M. Capellini exhibited a large piece of

amber which had recently been found near Bologna. It was of an opalescent colour. He gave a general conspectus of authorities upon the several discoveries of amber that have been made at various times in this district, and also of the more important sources in Sicily, and argued that the Etruscans would hardly go to the Baltic for a material which was to be had so much nearer home, and that they probably derived a large portion at all events of their supply from local sources. This was not the general opinion of the meeting, however; the direct statements of Pytheas, Tacitus, and Procopius, as to the sources of amber in their day having been the Baltic, were quoted by the reporter. Procopius described the route followed by the envoys of Theodoric, who were sent to bring him some of the precious fossil gum, and who returned with a large piece, as having been through Pannonia. It is well known also that the trade routes from the Prussian coast to Rhoetia and to the Danube are strewn with objects of bronze of a peculiar fabric, which has been, with great probability, assigned to Etruscan influences. The coins made in imitation of those of Macedon, on which Mr. Evans has written so ably, are, I was told, found in Pomerania, but not in Jutland. Baltic shells have been found, I believe, in graves in Southern Germany, and it is highly probable that the Etruscans had an extensive trade with Hallstadt for salt. Lastly, as a proof that the knowledge of amber came from the north, it may be cited that it is exceedingly common in the northern graves of the stone age, while in Italy it is not known until the iron age. The quantity of amber in the later age of metals in the north is very much less than in the older graves, which, it is argued, is due to the fact that exportation had then commenced, and rendered what was once common a rare article, as in the corresponding case of gold in Peru before and after the Spanish conquest. Amber has been lately found in Transylvania, and M. Römer exhibited a piece from there. Like bronze, amber was probably exported in the rude state, for in England, according to Mr. Evans, objects made of amber have been found imitating native objects made of jet.

Sunday was devoted to visiting the Museum. The National Museum is contained in a very handsome and commodious new building, of Palladian architecture, which forms a striking object from the lake. It is of two storeys, and very commodious and convenient. The various collections were explained by the ever-courteous curators. M. Hildebrand, senior, showed the coins. The collection, as is well known, is unsurpassed for its Anglo-Saxon coins, a catalogue of which was published by the veteran archæologist just named. They were the result of

the plundering expeditions of the Danes, and far surpass in numbers, and probably in variety, those in our own collections. Large hoards are constantly being found in Sweden. In the Prehistoric Department the great strength of the Swedish collections is in the stone objects, and those of the so-called Viking period. Of the former the number is very large, the greater portion having been found in Scania and the southern provinces. They naturally resemble the Danish types, only that the polished pierced hammers, of elaborate make, to which I have already referred as probably imitations of metallic ones, are much more common here. In objects of the bronze age the Museum is comparatively weak when compared with the Danish and Irish collections; nor did I note anything very peculiar, except the wheels and framework of one of those curious sacrificial (?) bowls which have been found in Etruria, in Styria, and in Prussia, and which are all probably of Etruscan origin. The iron objects are richer. They are classed by the northern antiquaries in three periods—the first iron age reaching to about the 5th century, the second to the 9th, and the third the so-called Viking period. Of the first are several objects, showing distinct Roman influence, a large bowl with an inscription, and various statuettes. It is curious how the swords of this period have been twisted and bent, and even rolled up, showing of what bad temper they were made. The great mass of material for studying this epoch is, of course, that discovered by Engelhardt in Schleswig. He described to me the extraordinary skill with which the handles of the swords were decorated with patterns in which silver wire was hammered into meandering and other lines, probably chiselled out of the iron. This inlaying of metals, I suggested, was much practised in the later Byzantine period, and employed in decorating the great bronze gates which were made at Constantinople, such as those at Monte Casino, &c. The second iron period is distinguished chiefly by an abundance of Byzantine coins, and of imitations, some of them very large and handsome, of Byzantine bracteates. The goldsmiths' work of the two earlier iron ages is exquisite. There are three grand collars, or rather gorgets, here, made of a number of curved gold rods fastened together by delicately woven chain-work. This peculiar chain-work, which I had not seen elsewhere, is also used for rings, several here being formed of three snakes coiled side by side, with the interspaces filled with the same delicate work. It seems to be of Byzantine origin, and deserves a special study. One of the gorgets is well figured in M. Montelius' work on the Museum. The swords of the second iron period are distinguished by having their surfaces elaborately damascened in

various patterns. Very many of these damascened swords have been found in Denmark, and some might well be spared thence for our own national collection, whose indefatigable curator it ought to be our first duty on every occasion to assist. This damascene work, M. Engelhardt thinks, is Eastern. It is certainly very curious, and raises some interesting questions about the iron metallurgy of that period. These swords seem to be very locally distributed, both in space and time. They are not found at all, I believe, in the west of Europe, nor are they found either in the Viking period. Objects of this last period are very well represented here. It is distinguished by an abundance of silver objects (so rare in the earlier epochs), and by a corresponding dearth of gold; by an abundance of Anglo-Saxon and Cufic coins; great numbers of armlets and bangles of twisted silver wire, &c., all of clearly Eastern fabric, and of silver chains with pendants. Several of these latter are in the shape of Thor's hammer, some decorated in beautiful filagree; others have Byzantine crosses suspended from them. There are also numerous round brooches of silver, covered with filagree ornaments, that are very distinctly Eastern. Of the bronze objects peculiar to Norse times there is an unrivalled collection here. Thus there is a whole case full of those oval brooches found generally in pairs, of which a few have occurred in Britain. Some of those here are very elaborately made, with bosses and animals' heads em. Other types of the same epoch were to the Island of Gothland. These are made in the shape of boars' heads, others in the shape of oval snuffboxes, pierced and knobbed. The Swedes are so rich in both classes that a few specimens might assuredly be spared for our British Museum. The pins in these bronze brooches were made of iron. From the Isle of Gothland also came three immense specimens of the better known fibula type. These are about half a foot long, decorated with interlaced dragons and snakes, and having moveable discs fastened to them. It is hard to conjecture the use of these enormous brooches. Alas! I was forgetting what our descendants will say of some of the monstrous ornaments the vanity of our own age has invented. I was forgetting how vanity smiles at inconvenience. One of these large fibulæ is also figured by M. Montelius.

The Mediæval Department is no part of my business at present, but I cannot forbear quoting a very precious object it contains, which has apparently been overlooked by writers on the history of enamels. This is an episcopal mitre, decorated with a great number of those incunabulæ of collectors, namely, Byzantine cloisonné enamels. Mr. Franks, I know, looks upon

this mitre as a perfect mine of value. So will others who remember that while in all our English collections we possibly have ten of these enamels, this same mitre has probably fifty upon it.

On Monday, at ten, the Congress resumed its sittings, under the presidency of M. Desor. The first question discussed was whether the stone remains of Sweden showed the presence there of two races or one. M. Montelius read an elaborate conspectus of the Swedish graves of the stone age. These he divided into four classes—dolmens, chambered tombs, great stone circles, and tumuli. There is nothing to show, however, that these four classes of tombs correspond to any racial distinctions. It would seem, from the tombs of this age being found almost exclusively in Scania and Southern Sweden, and along the sea-board and rivers, that the folk who constructed them came from the south, where similar tombs are so frequent. M. v. Quast went further, and said they came from the south-west; for, strangely, these tombs are not found at all, or if found, they are very exceptional, in the country east of the Elbe. In the north of Sweden and Norway we come upon stone objects of an entirely different facies—namely, those found in the Lap graves. M. Rygh gave an interesting account of these, which was supplemented by the remarks of a very enthusiastic and successful explorer of Norwegian graves, M. Lorange, who has charge of the collections at Bergen. The Laps seem to have used stone objects until a century ago; but all the remains that have been found in their graves are entirely different to those of the stone-folk proper. The latter are not found further north than sixty-five degrees, where the former practically commence (a few only having been found further north), and continue to the North Cape. These Lap remains are classed by the northern antiquaries as belonging to the Arctic type. They consist of harpoons made of slate, of an entirely different form to those of the stone people, and also of numerous bone objects of a peculiar form. It were well if specimens, or at least casts, could be obtained for our collections. These discoveries make very probable, on archaeological grounds, a theory which has been advanced elsewhere on other grounds, that the Laps are not the remnant of the aboriginal population of Europe which was driven into the extreme north by other invaders, but are a comparatively recent arrival. M. Worsaae urged this view, and argued that they came from Russia in recent times.

The reporter drew attention to the existence of a comparatively recent race of dolmen builders in the Caucasus, namely, the Abkhazians, and suggested that they might prove to be

the representatives and descendants of the stone-folk proper. During the discussion the King entered the room, and was entertained for the remainder of the sitting by a renewal of the old combat between M. Quatrefages and M. Virchow, which has become classical. The German professor did not fail to express his dissatisfaction with the results of craniometry in classifying races. Parenthetically it was observed that remains of the reindeer have not been found in the Danish kitchen-middens, although they have in those of Skane. This is interesting to English ethnologists, who will remember that reindeer have been found in the Pictish burghs in Scotland, which are doubtless more recent than the kitchen-middens. A suggestive query by M. Bertrand, as to whether there was any evidence that the reindeer had been domesticated by the stone people, received no answer.

In the afternoon the discussion was somewhat discursive. M. Mortillet argued that dolmens were not to be taken as distinctive of race, but as modifications of cave sepulture that arose naturally in different localities, without any common ancestor. M. Hamy said, in confirmation of this view, that he had recently, near Paris, discovered dolmens whose contents were similar to those of the reindeer people, showing a continuity between the palæolithic and neolithic folks, and that there was no break. M. Desor, on the other hand, said, and most justly, that the introduction of domesticated animals was a complete revolution, and enables us to separate the two epochs completely. M. Capellini communicated an account of a primitive manufactory of stone objects which had been discovered in the district of Bologna. Until recently it had been supposed that the objects of stone found in Italy had been imported, but this proved them to have been home-made. M. Belucci mentioned the discovery of amber in a deposit of the bronze age in Italy. Previously it was supposed that it was introduced there by the iron people, and I am disposed to doubt this discovery. As yet I know of no evidence that there ever was a bronze age, properly so-called, in Italy. In France M. de Baye has found amber in the neolithic caves of La Marne, and M. Cazalis de Fondouce in a megalithic structure of the transition period between stone and bronze; M. Chantre in many deposits of the bronze and iron age in the Hautes Alpes and the Alps of Savoy and Dauphiny. Mr. Franks referred to amber having been found in Roumania; while M. Landberg, who has been entrusted with a scientific commission in Syria, mentioned having found it in some very old graves in the Baherein Islands, off the Syrian coast, in graves of probably Canaanitish age.

Reverting once more to the dolmens, Mr. Evans remarked

that their distribution depends a good deal on there being the stones necessary to make them of at hand; but this surely will not explain their remarkable absence from Finland, Russia, and, indeed, all continental Europe east of the Elbe, except Scandinavia. This area is particularly strewn with boulders, and there can be small doubt that their absence there is due to the absence from that particular area of the race who built such structures.

M. Schaffhausen showed a leaden hammer found at Neuss, near Cologne. This he described as a Thor's hammer. It was probably a model. Celts made of lead, and considered to have been used as models, have been found in Brittany.

Tuesday was a red-letter day in the meetings of the Congress. An excursion had been organised to Upsala to see the sights there, and especially to see the interior of one of the three great mounds of the kings, which are so familiar to archaeologists from the frontispiece in Sir John Lubbock's "Prehistoric Times." As is well known, these mounds are situated close to the site of old Upsala, now a mere hamlet, with a very ancient church close by. The mounds are situated in a row on the crest of a range of sand-hills, so that their real is not so great as their apparent height, although this is very large. M. Hildebrand, in telling us their history, said the names of Odin, Frey, and Thor had only been applied to them as late as the last century, and it would seem that it was Rudbeck who thus named them. A wedge had been cut out of the western mound so as to expose its interior very completely. First a hard clay platform seems to have been made, in the centre of which was placed the urn with the *débris* of the cremation of the body. Unlike many of the Norse graves examined in Russia, the urn was put on the ground, and a hole was not dug to contain it. Over the urn was piled a cairn of stones, and over this a mound of sand and gravel; this again was covered with a deep layer of clay of a fine, even texture, and probably worked before it was placed there. This acted as a binder to keep the lower layer together. Over the whole was a thickness of two or three feet of humus, sodded over. Some of the contents of the cairn were exhibited on a table in the excavation, and consisted of a broken vase of unbaked clay and a quantity of bones, ashes, &c. A few other objects that had escaped the fire were at the Museum. *Inter alia* there were found two small Roman cammei of a debased period, probably of the fourth century, and some fragments of the peculiar cloisonné work inlaid with garnets or cornelians, which is found in early Merovingian and Anglo-Saxon graves. The remains answered in date to those found in the eastern mound, which had been

opened some years before. They all three probably date from the fourth century, and this is about the date when many suppose that the Asirs, whose metropolitan city was Upsala, began to lead the colonies of German tribes into various parts of Europe. They probably are the burial mounds of the early Yngling race of kings. In the graveyard of the adjoining church are two stones with Runic inscriptions on them. Having seen the sights at Gamla Upsala, we returned to the more modern city, where we were met by a large number of students ranged under the banners of their several nations, and were escorted through the town to the university, where we had a luncheon out of doors, and a number of addresses were made from a tribune in front of the building. These complimentary speeches were made by those representing the university and by representatives of the strangers. Mr. Franks spoke for England and was much cheered. We were all, naturally, taken to see the Codex Argenteus of Ulphilas, that primæval monument and foundation-stone of Teutonic philology. We were then shown the cathedral, where are many mediæval monuments of historic interest; most of them, however, of debased and rococo style. We finished by looking at a small local museum of antiquities, which, however, does not contain anything not better represented at Stockholm.

On Wednesday a discussion was again raised, upon the beautifully-finished stone axes I have before referred to, by M. Soldi, who argued at some length that they were imitations of bronze axes, and belonged to the transition period when bronze was still rare, and it was therefore economical to imitate it in stone. This view was controverted by M. Hildebrand, jun., who said they had never been found with objects of the bronze age, but he admitted that they had not been found in tombs of the stone age in Sweden, although they had in Denmark. Mr. Franks said that the discoveries in the Swiss lakes showed that pierced axes were certainly used there in the polished stone age. The evidence in England, he said, went to show that they were used down to the bronze age. It was clear that in England they could not have been copied from pierced bronze axes, which are not known there. The idea of Dr. Klemm, that the holes in the pierced axes were made by a bronze ferule, he said was quite untenable. It seems to me that the question of the ordinary pierced stone hammer or axe stands entirely on a different basis to that of the very elaborately-finished and boat-shaped Swedish pierced hammers, which last certainly have every appearance of having been copied from metal originals. M. Desor was disposed to agree in this view; but he said he had never seen a bronze hammer corresponding to this type of stone hammer from which the latter could have been imitated.

M. Hildebrand then took up the subject of the source whence the bronze culture reached the north. It had been suggested that it came from Pannonia, *i.e.* Hungary; but if so, he argued that we ought to find earlier and more simple forms in the latter country, while, as a fact, the swords found in Hungary were of a larger and more mature form than the swords and daggers found in the north. The Hungarian fibulæ, on the contrary, seemed to be of an earlier form, and he concluded that the bronze culture had developed independently in the two areas. Mr. Evans remarked that in England the bronze daggers also seem to have preceded the swords, the former only being found in graves.

M. Lorange then read a paper "On the Bronze Age in Norway." It had formerly been denied that there had been a bronze epoch there. Near Frederickshald he had found a great number of cairns enclosing granite cists of this age. They were generally found on mountains overlooking a lake, or the sea. Most of them had been rifled of their contents, but he had recently found two intact, in one of which was a bronze sword, and in the other a bronze dagger. Two daggers from a third of these graves had reached the Christiania Museum. These four objects were like those classed as of the second bronze age in Denmark and Sweden. Near Stavanger, and as far as Bergen, other graves of apparently the same date occurred, but the cairns in these cases were covered with earth. Some of them contained skeletons, others only burnt bones. Upon some had been found splendid arms, similar to those found elsewhere in Scandinavia, and classed there as of the first bronze age. He had lately found two tumuli near Trondjem which belonged to the same age; but objects in bronze and gold, characterised by the features of this first bronze epoch, had been found sporadically in various parts of Norway. Near Christiania and Bergen there had been found, ten years before, some dozen rock sculptures of this same age; others had recently been found near Bergen, at Trondjem, and about 200 near Frederickshald. They were like those in Sweden which M. Hildebrand, senior, had assigned to the bronze age. The Baron Kurch argued, from the carvings found in Sweden, that the men of this period did not practise agriculture, and that they did not have domestic animals, except the horse. The representation of boats on these rocks pointed to the bronze-folk having been a seafaring people. M. Montelius then called attention to the rock sculptures at Bohuslan, which the elder Hildebrand had shown many years before, from the shapes of the swords carved on them, belonged to the bronze age. The absence of runes upon them also pointed to their being earlier than the iron age. M. Bruzelius mentioned

similar sculptures as existing in Scania, which he compared to those on the monuments found at Kivik and Valfara. He believed they represented incidents of war.

M. Desor then spoke of stones with cup markings which had been found in Switzerland and also in Sweden, and asked if they did not belong to the same age as the others. M. Soldi remarked that the rock sculptures could only have been made with metal tools, and that it had been proved that the intaglio-like Egyptian hieroglyphs had been cut with iron chisels. M. Hildebrand, senior, reported the recent discovery in the province of Norland of similar rock sculptures to those found in South Sweden. His son said that the stones with cup markings existed in large numbers in Sweden; that it was difficult to fix their age, for even the present Swedish peasantry have some kind of veneration for them, and make offerings in them; and again, an Icelandic saga mentions such a cup-marked stone as existing in Iceland, where it could only have been carved by Norsemen. This is a very interesting fact for the students of our own cup-marked stones, which are chiefly found in Norse-infested districts, and may, therefore, not be so ancient as is sometimes argued.

Returning to the question raised by the Baron Kurch, M. Engelhardt showed that at the close of the stone age in Denmark the pig, cow, sheep, and goat were known. He also mentioned that in Denmark there were two examples known of carvings on dolmens as in Sweden. These consisted of wheels and ships.

As a proof of Etruscan influence in the countries of the Baltic, Virchow quoted the recent discovery of a bronze cist, like those of the Certosa at Bologna, in Posen. Mr. Evans remarked that these cists were made of bronze plates, which had probably been either rolled or hammered out, and were not cast. M. Worsaae said none of these objects (*i.e.* objects of Etruscan origin) had been found in Denmark. They seemed to be of the end of the bronze age. He combatted the notion advanced by Virchow, and also in a communication of Lindenschmidt's, that the bronze art came from the south. The latter author had gone so far as to say there was no really indigenous art in Scandinavia till the tenth or eleventh century. The reporter argued that this question of the origin of the bronze culture was bound up with the sources whence the ancients derived their tin; that the supply from Cornwall was very limited in early times, while that from Spain was enormous, and probably supplied the west of Europe and the Mediterranean border-land, while Central Europe, Scandinavia, and perhaps Etruria, were more probably supplied from the mines of Bohemia and Saxony—sites which

had been much neglected in the discussion on the sources of tin among the ancients.

M. Capellini and M. Desor communicated notices, at the end of the morning sitting, of the exploration of certain very early cemeteries which have been recently discovered in Italy, and date from the very commencement of Etruscan influence, if not from an even earlier date. They are situated at Villanova, Gola-secca, and Ronzano. These early graves apparently belong to the early iron age (the bronze age having as yet not been traced in Italy). Among the things found in them were some very interesting ornaments of horse trappings, showing at how early a date, relatively, the horse was employed south of the Alps.

In the afternoon M. Engelhardt described the recent find in Denmark of a series of large gold vases, with handles terminating in snakes' heads. These are ornamented with concentric rings and punched ornaments. They are evidently hammered, and of a most interesting type. A good number of them have been found, and are now in the Copenhagen Museum. They are large cups, holding a quart or more, and shaped like some of the more elaborately finished funereal earthen jars found in graves of the bronze age in Ireland. M. Engelhardt argued that they were not of native manufacture, but imported. They are so curious and interesting that it is a pity we have not electrotype copies of them in London.

This was followed by a paper by Mr. Evans "On the well-known Stock-in-Trade of an Ancient Celt Moulder," which he added to his collection some time ago. This consists of raw bronze, of moulds, of undressed celts, &c. Mr. Evans has shown that, after they were moulded, the celts were tempered by hammering, and has also explained the way in which they were moulded, the original model having been made in lead. Mr. Franks then described some celts from Cyprus. These, I believe, came from General Cesnola's collections; four of them have been analysed, and of these three were of copper, more or less pure, and one of bronze. An object recently found in the great pyramid showed on analysis that it was made with copper mixed with a little iron. This is curious, for I have been told that in India a little iron was used to give toughness to bronze. Mr. Franks also exhibited some very large celts of the simplest type from India. These had also proved to be of copper. A fine collection of these Indian celts has been added to the national collection through the untiring energy of the ever-active curator of the Christy collection.

M. Pigorini reported that his Government had lately bought one of the terramaras in the province of Parma, named Caserolda,

which he said belonged to the early bronze age (?). This is to be preserved as a national monument—surely an example to our Philistine England in these matters.

M. Nilsson argued that the Cyprian axes were of Phœnician origin; while M. Landberg, who had assisted at the excavations in that island, said the art of the island was Greco-Phœnician, and not Phœnician pure. He said, further, that among the Semitic peoples bronze had always been preferred to iron, and was so still. He said that it was very important that some researches should be made upon Phœnician influence in the Euxine and in Southern Russia, where some curious riddles might perhaps receive an answer. We then had a communication from M. Aspelin on the "Stone Age in Finland and Esthonia." In regard to that age he divided Finland into three districts: Finland proper and Carelia, west of Lake Brega, Eastern Finland, and Esthonia. These three provinces were distinguished by peculiar idiosyncrasies in their remains, both in the shape of the implements and in the stones from which they were made.

M. Worsaae was confirmed by the Russian archaeologist, M. Lerch, in saying that the bronze objects of Siberia were quite unconnected with those of Scandinavia; and this is confirmed further by the few specimens that have reached England, such as those Mr. Franks recently bought for the British Museum. M. the Count De Saporta reported the discovery of impressions of *Ficus carica* in the quaternary tufas of Moret and the Seine valley, showing a considerable change of climate, since the presence of this plant argued a much more humid and uniform temperature in Europe than at present prevails.

On Thursday the Congress had an excursion to Biörko. Birca was a well-known early Swedish mart. It was there that Anskarius, the great apostle of Sweden, landed in the ninth century; but, very strangely, about the eleventh or twelfth century the town seems to have been entirely abandoned, and its site was lost, and has been the subject of much controversy. It is only recently that an engineer, in making some excavations at Biörko (i.e. Birch Island), one of the beautiful islands of the Malar Lake, found an immense cemetery, and also the site of an old city; the former was covered with forest, the latter was in a low, flat piece of ground, locally known, from its colour, as the "Black Ground." The extent of this site, the name of the island, and the character of the remains, show most clearly that it was here that ancient Birca was situated. It is now being excavated with great care by M. Stolpe, and it needs no rhetoric to show how very interesting such a site must be for those who are studying the remains of the Norse period. The remains

found are all, so far as I could hear, of that period—Anglo-Saxon and Cufic coins, bone combs, bronze brooches of elliptical form, masses of broken silver chains, glass beads, &c., &c., together with an immense number of bones, the refuse of the Norse kitchens. Mixed with these was much charcoal, but, strangely enough, no Runic inscriptions have yet been found there. Among the foreign objects there were some that might be traced to Gothland and Skane, mussel-shells from the west coast of Sweden, and cowries from the far east. The principal wild animals of which remains have been found are lynxes, wolves, bears, foxes, beavers, squirrels, hares, elks, reindeer, brown rats, and seals. Among the birds there were capercaillie and storks, while there were some dozen kinds of fish.

M. Stolpe is publishing an elaborate account of his diggings, which will no doubt throw much light on Norse manners. Biorko may, in fact, be considered as the boreal Pompeii, in which is buried the material for the social history of Northern Europe from the eighth to the tenth century; and it is to be hoped that the discoveries made there will be rendered more generally accessible by being described in some more “international” language than Swedish. After leaving Biorko the Congress went to the mediæval Castle of Gripsholm, a most interesting royal residence, where it was handsomely entertained, and then returned once more to Stockholm.

The meeting on Friday, the 14th of August, commenced with some remarks by M. Hagemans in support of those made on Wednesday by Count De Saporta. He mentioned the recent discovery of the trunk of a wild vine, namely, that of the *Vitis lambrusca*, at a great depth, with an urn of rude clay. The vine no longer thrives in this part of Belgium. He mentioned that megalithic remains were common in the district of Luxemburg, while mound burials with urns abounded in Belgium proper, there being a distinct difference in these respects between the Walloon country and that of the Flemings. He also said that amber did not occur in Belgium before the Frank period. M. Chantre, the very able French archæologist, then described the bronze remains of the Rhone valley. These he divided into two sections. The earlier, comprising chiefly so-called “buried treasures,” consisted mainly of new and unused objects, and were found in the neighbourhood of the Alps—he considered they showed that the art was imported from Italy; the second class comprising remains such as are found on the sites of bronze foundries—such as those found in the pile-dwellings of the Lake of Burget, and numerous foundries in the valleys of the Rhone, Isère, and Jura. M. Bertrand admitted the legitimacy of the distinctions raised by M. Chantre, but objected to

their being raised into differentiae of distinct ages. M. Chantre's second bronze age was confounded in France with the age of iron. He doubted the existence of any age specially distinguished by the use of bronze in France, and argued at considerable length in favour of revising the classification of the northern antiquaries, as unsuited to any but very local archaeological inquiries. M. Hildebrand contended that in Scandinavia there was unmistakeable evidence of two bronze ages and of a period of transition. Mr. Evans also objected to the phrase "two bronze ages," as if there was a want of continuity between the two, whereas there was not, and he preferred to speak of the early, middle, and late bronze age. M. Worsaae, in reply to M. Bertrand, said it would be curious indeed if a bronze age should be proved to have existed in England, Scandinavia, and Italy, and not in France. It is hardly twenty years since a stone age was known in France, and it would probably be found that future researches would prove the existence there of a bronze age. He believed that the bronze culture came from Asia Minor into Greece and Hungary, whence it spread over Europe, travelling by one route through Italy into Gaul and Britain, and by the other into Germany and Scandinavia. He said further that the second bronze age in Scandinavia was well marked. The objects which marked it resembled bronze objects found in France, and he believed that it was contemporary with an iron age elsewhere; the use of bronze having survived to a later date in the north, whence, as we know, it was only displaced by iron about the time of the Christian era.

M. Perrin mentioned the great number of bronze objects he had found in the Lake of Burget, among them moulds of stone and clay. He said they proved the existence of a vigorous bronze culture in the Rhone valley, and also supported M. Chantre's division of the epoch into two. He said the fragments of iron objects that had been found in the same place had nothing to do with the pile-dwellers, who were a bronze-using people.

M. Leemans, the curator of the Dutch collections, confessed that he had not been able from his researches in Holland to confirm the generalisation of the Scandinavian antiquaries. In Holland only very broad divisions can be recognised, and one can hardly wonder at this if we consider what the topographical features of Holland in prehistoric times were. A land of marsh and fen, the refuge of fugitive tribes, but hardly the chosen home of those among whom art-culture was most advanced. M. Bertrand wished to be understood as not questioning the existence of a bronze age proper in Scandinavia, but only as protesting against the correlation of this bronze age

with the so-called bronze age of Italy and the Mediterranean border-land, where iron and bronze seem to have been introduced almost simultaneously, and where the objects have a very different form and ornament. He said that, while the objects of this period found in Southern France established its near relation to Italy, those found in Northern were more like those of Scandinavia. He further said that there was not evidence in France of an age of cremation succeeding one of burial.

M. Hermelin then exhibited a chart, showing by coloured marks the distribution of prehistoric remains in the heart of Sweden proper, namely, the Malar Lake. He was followed by M. Montelius on the distribution of bronze objects in Sweden. As in the case of stone objects, the fertile district of Scania furnishes a large proportion of these—no less than 1,500 out of 2,500; but this proportion is not so great as in the case of the stone objects, of which 30,000 have come from Skane and only 7,000 from the rest of Sweden. Scania is separated from the Gothlands and Suithiod proper by the barren and formerly almost impassable district of Smaland, barren both of herbage and also of early remains. It would seem that the country further north was entirely cut off from Scania by this district, except along the edges of the sea in Halland and Bleking, and it seems to me, from other considerations and from the trade routes of later days, that it derived its culture and inhabitants chiefly from the district of Viken and the rich country about the Christiania fiord, and not directly from the south. As in the case of the stone objects, the bronze are practically limited in their northern range by the district about the Malar Sea, the Dal river being the actual frontier.

M. Chantre now distributed a beautiful diagram of the Rhone valley, on which the various kinds of prehistoric remains were marked by special signs and in various colours—these idiograms forming a capital bird's-eye view of the archæological topography of a country, both as to wealth, and also as to chronology and local distribution.

M. Dupont then read a paper "On Domestic Animals in Prehistoric Times," and remarked on the difficulty of distinguishing the remains of feral from those of domesticated animals. He remarked that the horse was abundant in the palæolithic age, and would seem to have furnished the folk of that period with flesh. It then seems to disappear, and its remains are not known in the age of polished stone implements. Did it become extinct, and was it re-imported, as it was in America? Are our horses descended from the horse of the quaternary period? M. Dupont urged that there was not evidence that the animals, not even the dog, used by the folk of the polished stone period

were domesticated. M. Desor combatted this, so far as Switzerland was concerned, and said that in the pile-dwellings of the neolithic age there, stables had been found.

M. de Baye then read an account of some artificial caverns he had explored in the department of the Marne. In these, rude sculptures, representing human figures and those of birds, carved with flint axes, had been found, as well as representations of such axes with their handles. These caverns were cut out of soft rock. M. Cazalis de Fondouce doubted whether the sculptures were of the age assigned, and asked if the caverns might not have been opened at a later period; but the author declared that the entrance was closed by undisturbed rubbish.

On Friday afternoon M. Vedel discoursed on the remains of the early iron age found in the very interesting Island of Bornholm, the original home of the Burgundians. These remains are of great interest, for it has been supposed that the knowledge of iron was introduced into Scandinavia in Roman times, while here 1,000 graves of the earliest iron age have been found, showing no trace of Roman influence, and showing a stage of transition, both in the objects and the graves, from the earlier age of bronze. I would remark that a "Memoir on the Archæology of Bornholm," a most interesting area, is now in course of publication.

This was followed by another very interesting paper, by M. Aspelin, "On the Bronze Objects found in the area occupied by the Ugrian and Turkish Tribes." Some objects of this interesting kind have been secured by Mr. Franks for the British Museum collection. Would there were more. If it be not an impertinence, I do think that the members of our society might do more than is done in assisting the national collection of these things. The valley of the Yenissei is crammed with graves which have been mines of wealth to the Kazaks and other nomads of the district for generations. It seems a pity that so very few objects from this area have found their way to western Europe. M. Aspelin remarked that some objects of the iron age from the Altai have a decided resemblance to others found in Scythic graves, that is, in the kurgans of the steppes of Southern Russia.

M. Virchow then discoursed on the remains found near certain submerged towns on the coast of Pomerania, especially that of Julin. These, like Biorko, are sites of Norse cities, and, like it, are characterised by the presence of Byzantine and Arabic coins, while the pottery is also very similar. He also remarked on the presence of traces of pile-dwellings in both; this was probably the closing chapter in their history. M. Dirks then described the remains found in Frisia. Only one dolmen is

recorded there; this is in the neighbourhood of Backhuysen. There are, however, many burial mounds; most of them seem to be of the so-called Viking period, with similar remains to those found at Biorko,—among other things one coin with a Runic inscription, another Cufic, and many Merovingian, Carolingian, Byzantine, and Anglo-Saxon. Frisia is a country in a large degree reclaimed by Norse settlers, and was no doubt but thinly settled before the ninth century, when it became the chief harbour of the pirates who attacked the Empire, and was several times granted as a fief to them by the emperors. M. Cazalis de Fondouce argued against the position maintained by some speakers at the Brussels Congress, that there was a break in continuity between the palæolithic age and the neolithic. He argued that MM. Quatrefages, Hamy, and Broca had shown that we still have among our western European peoples types descended from the men of the earliest prehistoric age. There was no stratigraphical evidence showing a general submergence at the end of the palæolithic age. In regard to the wild animals, he said that there was perfect continuity. With the exception of a very few, the animals of the palæolithic age still survived among us; while, as to the domestic animals, he agreed with M. Steenstrup that they had not been introduced by the folk of the second stone age, but had been gradually domesticated from the wild species then living in Europe. While, as to the artistic relations of the question, it would seem that at Gourdan and elsewhere there had been found traces of the transition from the one epoch to the other, and that there was continuity from the earliest age to the present. The climate gradually ameliorated, no doubt, and there was a constant inflow of new inhabitants with new ideas, but no break such as separates one geologic age from another. He also addressed himself to another difficult question, and quite agreed with M. Bertrand that there does not seem to be a purely bronze age in southern France. There, bronze is always accompanied by finely-worked flint, and in the sites of Roman and Greek settlements there is no intervening stratum between this transition period of finely-worked flints and bronze and the purely Roman or Greek work. In the dolmens of the same country which belong to this epoch there are found buried and burnt remains side by side, showing that there incineration is not a good test of any real difference, as has been lately shown by my friend Mr. Pennington in regard to the Derbyshire graves. M. Pigorini combatted the notion advanced by M. Bertrand, that there was no bronze age proper in Italy, and argued that in the Terramare objects of bronze were found in the lower strata, and of iron in the upper.

M. Schaffhausen exhibited the drawing of a gold ring found in a Frankish tomb near Bonn, with an inscription which he thought was Runic; but Mr. Franks contested this view, and urged that the characters formed a monogram. Similarly decorated objects, of Merovingian and Carolingian age, had come under his notice. M. Schaffhausen then made some remarks on the megalithic structures of Germany, some of which, he said, had no burials under them, and which, he thought, were used in great civil or religious ceremonies. He remarked that under the imperial throne of Charlemagne, still preserved at Aachen, there is a passage under which the subject princes crawled to show their subordination to him. Surely the school of Tübingen ought to take charge of such speculations.

M. Zawiska then discoursed upon the prehistoric relics of Poland, and especially of the neighbourhood of Cracow. He showed, contrary to what had been said at the Brussels Congress, that not only were finely-wrought flints found beyond the Vistula, but abounded in Poland, and to the south-west as far as Volhynia. The finding of nuclei, &c., showed that they had been made on the spot. In Lithuania flint objects are rare, and the general impression of the author was that then, as now, the marshy, inhospitable plains, inhabited by Poles and Letts, were but thinly peopled. M. Zawiska also discoursed and distributed a memoir, written in Polish, upon remains of the palæolithic age found in Poland. The day's proceedings concluded with an account by M. de Baye of the discovery of a number of the chisel-headed arrow-heads, which are generally referred to as of the Egyptian type, and of which several specimens from Egypt are to be found both in the British Museum and the Christy collection. He had found these in caverns in the Department of the Marne, one had been found imbedded in a human vertebra.

On Saturday morning, the 13th, the Congress commenced with a paper by M. Chaplain Dupare, giving an account of his researches, in conjunction with M. Lartet, in the cavern of Urutz, on the borders of Bearn and the old Basque country. This is a very interesting cave, containing a burial-place with a skeleton and skull, and a set of ornaments made out of the teeth of the bear and lion, pierced and ornamented, the *débris* of a necklace, and accompanied by worked flints, such as are found in the caverns of the Vézère. Besides this burial-place were also found two hearths containing burnt bones of reindeer, horse, and cow, and a large number of worked flints; and besides these a neolithic grave containing some very choice specimens of worked flints. The author insisted on the continuity of the whole series, and the absence of any gap between

the traces of the earlier and later folk. M. Hamy, in describing the human remains, said that they were of the same type as those found at Cro Magnon. M. Dupont said it was the first time that the teeth of the greater carnivora had been found pierced and used for necklaces. Hitherto such ornaments as had been found were made from the teeth of the stag, fox, wolf, and horse. He divided the palæolithic folk into two sections—one the Troglodytes, who had a special art culture in their cavern homes; the other, people who lived out in the open, and characterised by remains such as those of the Somme valley. It was these latter who gradually improved their condition, &c., and drove the Troglodytes away, or superseded them. They only used caverns for burial. To these folk belonged the skulls of Sclaigneaux, described by M. Virchow, which had such a peculiar, macrocephalous appearance. The speaker supposed this had been caused by some artificial means. M. Virchow, in reply, doubted if it were possible to produce such a deformity of skull by artificial means. M. de Quatrefages argued in favour of the persistence of such types, and their occasional appearance in modern times, due either to heredity or atavism. He also argued against M. Virchow's view, that the Neanderthal skull was a casual deformity, and did not represent a type, and quoted the skulls from Gibraltar as being analogous to it. He eulogised the labours of MM. Broca, Topinard, &c., in the field of craniology.

M. von Dueben then read a paper "On the Anatomical and Ethnic Characters of Prehistoric Man in Sweden." He argued that there was no evidence from the skulls that the races of the stone and bronze ages in Scandinavia were different from the later Goths and Svears. Out of fifty skulls he had compared, there were not greater differences than between fifty contemporary skulls. There was a tendency to a somewhat larger head in the old skulls, but these long heads appeared even now. Most of the crania discovered were of the long-headed type. Among hundreds which he had examined only ten were of the short-headed kind—five from Denmark and five from Sweden. They were all found in graves of the stone age, and did not differ from the skulls of the Laps. The skulls had, in fact, been described by Nilsson and Retzius as Lap; but, as the other evidence seems to show that the Laps entered Scandinavia from the north, and did not advance southwards beyond the 62° of latitude, it is not safe to give them the specific name of Lap, as they probably belonged to some other short-headed race. M. Zetlal then described worked flints he had found in the Lybian desert. It was not universally allowed that they were of indubitable human origin, and that most careful observer, M. Desor, urged

that caution should be used in accepting them. They had been found among "innumerable fragments split by the influence of the heat of the desert," so that this caution was more than necessary. Many of them had been found twenty geographical miles to the west of the Oasis of Achel. Engelhardt concluded the morning's proceedings with some interesting remarks. He said that runes were unknown in Germany, or, indeed, south of the Eyder, and that they were introduced by the iron folk. He also made some remarks on the subject of menhirs. Those in the Isle of Bornholm were considered by M. Vedel to be of the end of the bronze age or the beginning of that of iron. In Denmark only two are known—one surmounting a tumulus containing a small piece of bronze. They have been found with runes upon them.

The afternoon sitting commenced with the exhibition of some drawings on pottery, by M. de Baye. These he assigned to the bronze age. M. Belucci gave a résumé of the prehistoric archaeology of the Italian province of Umbria, in which he said, *inter alia*, that no prehistoric object of pure copper had as yet been found there. M. Lorange then read a memoir "On the Iron Age in Norway." He said that tumuli of this period abounded in all parts of Norway, from Christiansand to the North Cape. The mounds of this age are often marked by circles of stone. He divided them into three classes, the earliest having no chamber inside, but the burnt ashes, with small ornaments of bronze and iron, showing no Roman influence, and themselves also burnt, are contained in burnt-clay urns. Sometimes glass beads are found in them. The mounds of the second period contain small squared chambers, in which the ashes are placed in bronze urns. The ornaments of bronze or gold are not burnt, but the arms are twisted and bent, and have been subjected to fire. Objects showing Roman influence now appear. One bronze vase has been found with the inscription, "Libertinus et Aprus curatores posuerunt." Ninety of these tumuli are now known. The third class contain large chambers, in which the remains are sometimes burnt, sometimes not, while the objects ranged round them have not been subjected to fire. Vases of burnt clay, of bronze and glass, the last of Roman origin, occur in them. In these are also found bracteates, and arms, and Roman objects, which enable us to date this class of tumuli at from the third to the seventh century. About eighty of these tumuli are known in Norway.

M. Hildebrand read a paper by M. Aspelin, of Helsingfors, upon the "Prehistoric Remains of Finland"—a most interesting area, whose remains were illustrated by a very magnificent set of drawings in one of the anterooms. M. Lerch told the meet-

ing that M. Aspelin and the University of Helsingfors propose to publish a work on the Antiquities of Finland. This paper concluded the actual business of the meeting. At night the Congress was entertained most hospitably by the King and Queen at the Royal Palace of Drottningholm. The members were taken there in several large steamers, and returned at midnight, the various villas on the beautiful Malar Lake being illuminated in their honour. On Sunday, the 16th, at the concluding meeting, an invitation was read by the President, on behalf of the Austrian Government, which was so well represented in the Congress in the person of the Hungarian abbot, M. Römer. This invited the members to hold their next meeting at Buda-Pest, a course which was assented to, and the meeting closed with votes of thanks to the officers and to the Swedish authorities who had shown us so much hospitality. The meeting was in every respect a great success—in the numbers it attracted, in the value of the communications, and the universal feeling of satisfaction both with the arrangements and with the programme.

In concluding this report, I must express my apologies for its very unsatisfactory character. If I had known, when at Stockholm, that such a report was expected from me, I should have tried to make it more worthy of your acceptance. The earlier part I have taken chiefly from my own notes. These were, unfortunately, incomplete, and for the latter portion I have had to have recourse very largely to the detailed report of the meeting by one of its secretaries, M. Cazalis de Fondouce, which has appeared in the *Revue Scientifique*, and also to an admirable *résumé* of the proceedings, printed in the *Academy*, by Mr. Gosse.

NOVEMBER 24TH, 1874.

Professor BUSK, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following gentlemen were elected members: FRANCIS DASHWOOD WALSON, Esq., 26, Montagu Square, W.C.; CHARLES JUNIUS TINSON, Esq., Cleverlands, Cheltenham; ARTHUR WHITE, Esq., The Cedars, Hammersmith Road.

The thanks of the meeting were voted for the list of presents, as follows:—

FOR THE LIBRARY.

- From the EDITOR.—*Revue Scientifique*, Nos. 20 and 21, 1874.
 From the AUTHOR.—*Les Faunes Mammalogiques Tertiaire et Quaternaire du bassin du Rhône ; L'Age de la pierre et l'age du bronze en Troade et en Grèce ; Projet d'une Légende Internationale pour les Cartes Archéologiques Préhistoriques.* By M. Ernest Chantre.
 From the AUTHOR.—The Cavern discovered in 1858 in Windmill Hill, Brixham, South Devon ; Notes on recent notices of the Geology and Palæontology of Devonshire, Part I. ; Notes on Dr. Rivières discovery of three new Human Skeletons in the Mentone Cavern, in 1873-4. By W. Pengelly, F.R.S.
 From the EDITOR.—*Nature* (to date).
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Col. A. LANE FOX exhibited a blow-pipe, a bow, and several arrows from Costa Rica. They were brought to this country by Mr. John Pearse, who obtained them from a friend, the latter having procured them from the Talamanca Indians, in exchange for surgical services rendered to them. The Talamanca Indians live in a secluded part of the country, near Port Limon, on the Caribbean Sea, and will not allow any Spanish-speaking person to go near them. The arrows consisted of long reeds, with hard wood, multibarbed fore-shafts, tipped in some cases with iron, leaf-shaped heads; they have no feathers. Col. Fox pointed out the resemblance in the mode of binding on the fore-shafts, and other points of detail, between these long arrows and those used in Brazil, as well as those used in New Guinea, and commented on the distribution of the blow-pipe in the northern part of South America, Central America, and the Pacific. Col. Fox also exhibited a stone celt found in a grave near San José, and another from Port Limon.

DISCUSSION.

Mr. PEARSE said the larger stone axe exhibited by Col. Fox was obtained by him (Mr. Pearse) in the neighbourhood of San José, Costa Rica. From the number of ancient graves which have been cut into by the railway, it is evident that the country was once very thickly inhabited. The small stone axe came from Limon. The blow-gun, bow, and darts are weapons of the Talamanca Indians, who live in an almost inaccessible country in the neighbourhood of the Monte Blanco. Very rich gold mines existed here in the times of the Spaniards, who treated the natives so cruelly that they one day arose and murdered all their masters; since then they have not allowed any Spaniard or Spanish-speaking person to visit their country; they also keep the locality of the mines a profound

secret. They are kind and hospitable to Englishmen. The speaker learnt these particulars from a young Virginian who accompanied Professor Gabb, of Boston, in a journey through the Blanco district, where he is now travelling.

Mr. E. CHARLESWORTH exhibited and briefly described some figures carved in silver-amalgam by native Mexican miners. He also exhibited a chaplet of gold and silver coins worn by the peasant women of Nazareth.

Mr. PEARSE, Mr. PARK HARRISON, Mr. HYDE CLARKE, Señor DE LA ROSA, Mr. GORE, Col. LANE FOX, and the PRESIDENT also spoke on the above communications.

Mr. Rudler read the following notes for the author :

NOTES on RUINS in the NEIGHBOURHOOD of PALMYRA. By C. COTESWORTH. [With Plate xxv.]

THE mausoleum visited by the author in March, 1872, is represented in Plate xxv. The entrance doorway faced the east; and a square, winding staircase was in the south-east corner. The tower was six storeys high, and had a large vault under the basement. Four loculi were built on the north and south sides of the basement, each divided into three compartments by porcelain shelves resting on ledges cut in side-walls. These divisions sometimes amounted even to eight in the upper rooms, which were not at all uniform in height; and it seemed as though the various storeys had been added from time to time as required. This tower, which may be taken as a typical one, had no cornices, rich ceilings, or sculpture, though probably under the arch in front the usual figure of a mourning female (recumbent), with elbow on an exhausted water-jar, once existed.

This place would have contained some 420 bodies. A large quantity of bones, mummy-cloths, and other dirt and rubbish was found, but no perfect remains beyond shell of building. On the south side of the Kurgetein road there is the ruin of one of these tombs, with four storeys standing; it is 30 feet square and 74 feet high. It has a handsome door about eight feet high; over this an arched recess with window, as in the preceding, and on the projecting sill a recumbent female figure. There is an inscription on this tower in Palmyrene and Greek, with the date 414 (102 A.D.). The ground-floor chamber is 27 feet 2 inches by 10 feet, and 19 feet 8 inches high. On either side there are four flat, fluted columns; dividing the loculi at the

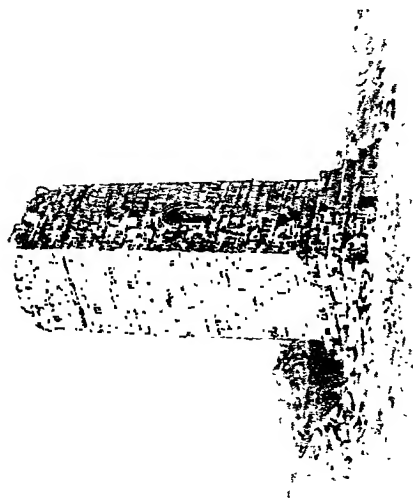


Fig. 1

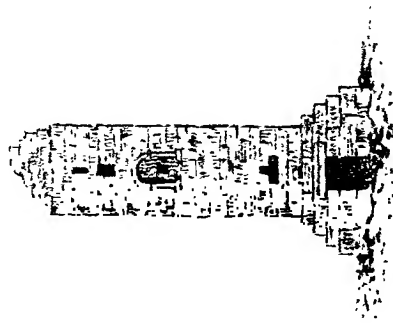


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5

end facing the door are two half columns, and above them nine figures with mutilated Palmyrene inscriptions to each. The ceiling is very rich, and of stone slabs, painted busts and flowers in relief on a blue ground. The ceilings of the upper floors are also panelled and painted. I am not sure whether it was in this, but the egg-and-dice cornice was very usual; also a heavy, deep, plain moulding round the lower chambers; the upper ones were in general quite plain. There were no remains of bodies or mummy-cloths here.

The chief group of these towers lies to the westward of this place and to the south of the Kurgetein road, on the hills facing the castle; most of them have been cleared out, probably by the Arabs for fuel—I have had very good coffee indeed boiled over a mummy fire; but there are still a good number of bones, &c., such as those I send you. They may or may not be interesting, but one thing I guarantee, they have never seen the light since first put away 1,800 or 2,000 years ago. There are also a large number of underground tombs and caves with the same arrangement of loculi as in the vaults under the towers. My own idea is that these are the remains of more ancient burial places, of which the overground structure has crumbled away. We sank some thirty or thirty-five shafts about 20 feet down, trying to discover a previously unopened one, but were unsuccessful. The open ones were of little interest, as hyenas, wolves, foxes, and other beasts of strong masticating habits had tossed about everything.

All the buildings are of a remarkably hard limestone, which takes a good polish, looking like marble, and standing weather better. It is in common use at Damascus for fountains, &c., where water has constant action.

EXPLANATION OF PLATE XXV.

Fig. 1.—Mortuary tower, or mausoleum, at Palmyra; from a photograph.

Fig. 2.—Elevation of east front of a tower, showing doorway; height of tower 111 feet; base, 33 feet 6 inches square; tower, 25 feet 8 inches square.

Fig. 3.—Plan of basement, showing four loculi on north and south sides.

Fig. 4.—Upper chambers, showing four loculi on each side, four above four.

Fig. 5.—Figure showing division of loculi on the basement into compartments by porcelain shelves, resting on ledges cut in the side-walls.

The President read the following paper :

NOTES of some SKULLS from PALMYRA, presented to the INSTITUTE by the late Mr. COTESWORTH. By GEO. BUSK, F.R.S., Pres. Anth. Inst.

THE skulls which form the subject of the following few remarks were procured by the late Mr. Cotesworth, and have been presented to the Institute by his executor.

Skull No. 1.—This skull is that of an individual probably between twenty and twenty-five years of age, and, from the characters, presumably of a female. The teeth are of small size and very regular, and the skull generally is of delicate formation and small dimensions. It is dolichocephalic (78), with a regularly oval contour as viewed from above; in the *norma lateralis* it presents a vertical forehead, and a somewhat flattened or straight outline in the vertical region. The occiput is prominent. The face is orthognathous. It resembles, in fact, in all essential particulars, the skull represented in figs. 1, 2, 3, and 4 of the plate accompanying Mr. C. C. Blake's account of the Palmyrene skulls brought by Captain Burton ('Journ. Anthropol. Inst.,' vol. i. 1871, p. 312 *et seq.*), and which is stated by the writer to represent "a typical modern Syrian skull." The only point connected with this skull to which I need further advert is the great depth of the palate, which is also noticed by Mr. Blake (*loc. cit.* p. 314) as having existed in one of the skulls described by him; and, according to M. Pruner Bey, is characteristic of the "Semite Phenician." I should not, however, myself be inclined to place much stress upon such a character as of great distinctive value, seeing that it is often met with to quite an equal extent in almost every variety of race.

Skull No. 2 presents pretty nearly the same general form as the preceding, but it is of far larger size, having the very considerable length of 7·6 inches, with a width of 5·6 inches. It is well formed and perfectly symmetrical, and, from the teeth and other indications, has belonged to an individual about twenty-five years of age, of great muscular strength, and probably of tall stature. In most respects it corresponds very closely with the skull No. 2 of Mr. C. C. Blake's paper, and, so far as it goes, is in favour of the suggestion therein contained, that "a very large and exceptionally tall race of men existed at Palmyra at an early period of history."

Skull No. 3.—In this skull, which has apparently proved part of an entire mummy, the face is in great part still covered with remains of the dried integuments. It differs widely in several respects from the other two, both as regards age and conformation. It is that of an aged man, all of whose teeth

of the upper jaw are gone and their alveoli completely absorbed, as is the case also in a skull, now on the table, from Ain Sinia, procured by the late Mr. Tyrwhitt Drake in 1872. The forms, however, of the two skulls are quite distinct. The present one is highly dolichocephalic, the latitudinal index being .71 and the altitudinal .72, whilst the corresponding measures in Mr. T. Drake's skull are .74 and .78. The forehead is more reclined and the occiput more prominent than they are in the other two specimens.

Though adding little to the information respecting the Palmyrene mummy skulls afforded by Mr. C. C. Blake, those now exhibited are of interest as confirming the fact that the people whose remains they represent, at whatever period they existed, were a robust and dolichocephalic race, certainly having no relation to the Mongol type, and in all probability distinct, at any rate from the Hebrew branch, of the Semitic stock.

Dimensions and Proportions of Palmyrene Mummy Skulls.

	Length.	Breadth.	Height.	Latitudinal Index.	Altitudinal Index.
No. 1	6.0	5.4	5.2	7.8	7.5
„ 2	7.6	5.6	5.7	7.3	7.5
„ 3	7.6	5.4	5.3	7.1	7.2
Captain Burton, No. 4 . . .	6.5	5.0	—	7.6	—
„ „ „ 5 . . .	7.3	5.5	5.6	7.5	7.6

DISCUSSION.

MR. JEREMIAH, with reference to a remark made by the President as to the apparent likeness between the Tower of Palmyra, described in the note previously read, and the old Bell towers in Italy, reminded the meeting that there was a passage in the "Chronicon Scotorum," of the Rolls publication series (Ireland), where a round tower is alluded to, under the date 949 A.D., as "The Belfry;" although he would be the last to maintain that the origins of the Irish and Scotch round towers and the square ones of Palmyra were identical.

The discussion was further sustained by Mr. HYDE CLARKE and Señor DE LA ROSA.

Mr. W. BOLLAERT exhibited a number of photographs, engravings, and sketches of Peruvian antiquities, and communicated some descriptive notes, which were read by Mr. Rudler. The collection has been presented to the Institute by Mr. Bollaert, and includes the following photographs, &c. :—

Photograph of a Peruvian zodiac or calendar, found at Cuzco, the ancient capital of Peru; photograph of the “Tupu,” or engraved pin, found at Cuzco; tracing of the back gable of the Coricancha, or Temple of the Sun, at Cuzco; photographs of the Palace of the Inca Yupanqui, at Cuzco, of the House of the Virgins of the Sun, of the Temple of the Sun, of the House of Garcilasso de la Vega, taken by Mr. Squier, and lithograph of an ancient wooden cup found at Cuzco; photograph of Peruvian (probably Aymara) figurative writing, and enlarged tracing of the characters; photographs of Tia-Huanaco, Bolivia, including the great monolithic portal, the small portal, the “American Stonehenge,” and the Seat of Justice; also photographs of Peruvian pottery and crania in the Museum at La Paz; drawing of a head, probably that of a Chimu ruler; photograph of stucco work, from the vicinity of Pativilca; engravings of an ancient vase and a “whistling jug”; and photograph of a Chimu sceptre from Chicama.

This collection of photographs, &c., with Mr. Bollaert’s accompanying descriptions in MS., is deposited in the library of the Institute, where it is available for reference by the members.

The thanks of the meeting having been voted to Mr. Bollaert, the meeting separated.

DECEMBER 8TH, 1874.

J. E. PRICE, Esq., F.S.A., *in the Chair.*

The minutes of the previous meeting were read and confirmed.

Captain HAROLD DILLON, of Dytechley Park, Charlbury, Oxon, was elected a member.

The following presents were announced, and thanks were voted for the same :—

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société d’Anthropologie de Paris. Vol. IX. No. 2.

- From the AUTHORESS.—Zoroastre, son époque et sa doctrine en rapport avec les migrations Aryennes. By Madame Clemence Royer.
- From the AUTHOR.—The Descent of Man; 2nd edition. By C. Darwin.
- From Major SAMUEL R. J. OWEN.—Letters on Spiritualism. By Judge Edmonds.
- From the EDITOR.—Revue Scientifique. Nos. 22 and 23, 1874.
- From the AUTHOR.—On the Natural History and Distribution of Yellow Fever in the United States. By Dr. J. M. Toner.
- From the SOCIETY.—Proceedings of the American Philosophical Society. Vol. XIV. No. 92.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XVIII. No. 78.
- From the SOCIETY.—Transactions of the Asiatic Society of Japan, July, 1874.
- From JAMES BURNS, Esq.—Human Nature, for Nov. 1874.
- From the MANX SOCIETY.—Chronicles of Man. Vol. II.
- From the EDITOR.—Nature (to date).
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The following paper was read by the author :

SOME ACCOUNT *of* a LEAF-WEARING TRIBE *on the* WESTERN COAST *of* INDIA. By M. J. WALHOUSE, late Madras Civil Service.

SOUTH CANARA is the most northerly of the Madras Provinces on the western coast of the Peninsula, and lies nearly midway between Bombay and Cape Comorin. Probably nowhere in India will a greater variety of castes, classes, and nationalities be met with than along its seaboard; for trading vessels from the Persian Gulf, the Arabian, and even the African ports, as well as from all along the Indian coast, resort thither; and on the inland side a constant communication is kept up with Mysore, Coorg, and Malabar. One of the family of Dravidian tongues peculiar to Southern India is spoken only in South Canara, namely, the Tulu, now spoken by about 150,000 people, and really the popular tongue of the district, the ancient Hindoo name of which is Tuluva, but not being recognised officially or taught in schools, and being, moreover, hard pressed by the Canarese which surround its limited area, will probably die out. The Aliya Santāna law, or custom of inheritance on the female side, to the exclusion of sons, is also the recognised law of the district. Having been posted for several years at Mangalore, the head-quarters of the district, I often met with the people about to be described, the Korāgars, a remnant, now numbering but a few hundreds, of the aboriginal slave-castes, whose dis-

tinctive peculiarity is that the women wear aprons or screens of woven twigs and green leaves over their buttocks. In old times both sexes were allowed to wear only these leafy aprons for clothing; but now the custom is confined to the women, and is an instance of how what was once a badge of degradation may become a cherished observance; for the leaf aprons are now useless, being worn *over* the clothes, and must indeed be inconvenient, and might doubtless be abandoned, but the usage is maintained by the women, who think that leaving it off would be unlucky. A number of Korägar women walking before one on a road present a quaint and peculiar appearance, with the leaf aprons covering all their hinder parts.

The people themselves are a very quiet and inoffensive race; small and slight, the men seldom exceeding five feet six inches; black-skinned, like most Indian aborigines, thick-lipped, noses broad and flat, and hair rough and bushy. Their principal occupation is basket-making, and they must labour for their masters. They live on the outskirts of villages, and may not dwell in houses of clay or mud, but in huts of leaves, called "Koppus." Like many of the wild tribes of India, they are distinguished by unswerving truthfulness. "The word of a Korägar" is proverbial, and is always at once accepted by even so tortuous and suspicious a people as the Hindoos, whose tendency is quite Cretan, and the other way. It were curious to speculate on the origin and continuance of this habit of truth-speaking in barbarous tribes; possibly an original instinct that may have become hereditary, or upheld by popular usage in peculiar circumstances, but too generally obscured and destroyed.* Numerous slave-castes, held and regarded by the upper classes as slaves, exist throughout India, not of course recognised by law—indeed, formally emancipated by an Act of Government in 1843—but still, though improved in condition, virtually slaves. Their origin and status in the complex Hindoo system are thus described.

After the four principal classes, who sprang from Brahma, came six Anuloma castes, which arose from the intercourse of Brahmans and Kshatriyas with women of the classes below them respectively. The term Anuloma denotes straight and regular hair, which in India always characterises the Aryan stock. After these came six Pratiloma castes, originating in reverse order from Brahman and Kshatriya women by fathers of the inferior classes. The third amongst these was the Chandāla, the offspring of Shudra fathers by Brahman women. Each of

* See J. S. Mill's "Essays," page 51, "Savages are always liars. They have not the faintest notion of truth as a virtue." This must have been said in his haste.

these castes has its own distinctive appellation, and rigidly observed rules and status.

The Chandālas, or slaves, were again subdivided into fifteen classes, none of which might intermarry, a rule still strictly observed. The two last, and lowest of the fifteen classes, are the Kāpāta, or rag-wearing, and the Soppu, or leaf-wearing Korāgars. Such is the account given by Brahman chroniclers; but the probability is that these lowest slave-castes are the descendants of that primitive population which the Aryan invaders from the north found occupying the soil, and, after a struggle of ages, gradually dispossessed, driving some to the hills and jungles, and reducing others to the condition of slaves. No history records the contests, struggles, and revolutions that must have prevailed for unknown periods; only some faint echoes can be caught in popular traditions; and in laws, rules, and existing customs, the antiquary can see evidence of times when the ancestors of the half-wild subject classes of to-day were the masters of the land. The mountain-ranges and great jungle tracts of Southern India are inhabited by semi-savage tribes, who, there is good reason to believe, once held the fertile, open plains, and were the builders of those megalithic sepulchres which abound over the cultivated country. It is known that even up to the 15th century a primitive race, called Karumbars, formed an extensive and powerful federation in the south. That race has now very nearly vanished, a very scanty remnant only existing in the wildest recesses of some of the western mountain regions. All these races are regarded by their Hindoo masters with boundless contempt, and held unspeakably unclean. This feeling seems the result and witness of times when the despised races were powerful, and to be approached as lords by their now haughty masters, and was probably intensified by struggles and uprisings, and the memory of humiliations inflicted on the ultimately successful conquerors. Evidence for this may be inferred from many curious rights and privileges which the despised castes possess and tenaciously retain. On certain days they may enter temples which at other times they must not approach. There are several important ceremonial and social observances which they are always called to inaugurate or take some share in, and which, indeed, would be held incomplete and unlucky without them; and at particular seasons there is a festival much resembling the classic Saturnalia, in which, for the time, the relation of slaves and masters is inverted, and the former attack the latter with unstinted satire and abuse, and threaten to strike work unless confirmed in their privileges, and humbly solicited to return to labour.

Moreover, the contempt and loathing in which they are

ordinarily held are curiously tinged with superstitious fear, for they are believed to possess secret powers of magic and witchcraft, and influence with the old malignant deities of the soil, who can direct good or evil fortune. As an instance relating to the subjects of the present paper, if a Brahman mother's children die off when young, she calls a Korāgar woman, gives her some oil, rice, and copper money, and places the surviving child in her arms; the out-caste woman, who may not at other times be touched, gives the child suck, puts on it her iron bracelets, and if a boy, names it Korāgar, if a girl, Korāpūlu; she then returns it to the mother: this is believed to give a new lease of life. Again, when a man is dangerously ill, or persistently unfortunate, he pours oil into an earthen vessel, worships it in the same way as the family god, looks at his face reflected in the oil, and puts into it a hair from his head and a nail-paring from his toe. The oil is then presented to the Korāgars, and the hostile gods or stars are believed to be propitiated.

The power and eventual degradation of the Korāgars are thus spoken of in an ancient local tradition. When Lokadirāya, whose date is fixed by Wilks about 1450 B.C., was King of Bhanvarshe, in North Canara (a place noted by Ptolemy), an invader, by name Habāshika, brought an army from above the Ghauts, consisting of all the present Chandāla or slave-castes, overwhelmed that part of the country, and marched southward to Mangalore, the present capital of the province. The invading host was scourged with smallpox, and greatly annoyed by* ants, so Habāshika moved on to Manjeshwar, a place of ancient repute, twelve miles to the south, subdued the local ruler, Angārawarma, son of Virawarma, and reigned there in conjunction with his nephew; but after twelve years, both died—one legend says through enchantments devised by Angārawarma; another, that a neighbouring ruler treacherously proposed a marriage between his sister and Habāshika, and on the bridegroom and his castemen attending for the nuptials, a wholesale massacre of them all was effected, after the manner of the massacre of the British chiefs by the Saxons on Salisbury plain. Angārawarma then returning, drove the invading army into the jungles, where they were reduced to such extremity that they consented to become slaves, and were apportioned amongst the Brahmins and original landholders: some were set to watch the crops and cattle, some to cultivate, others to various

* The neighbourhood of Mangalore is still very bushy, and the fierce, biting yellow ant (*Ecophylla smaragdina*) makes its nest amongst the leaves, and abounds to a most annoying extent, penetrating everywhere; one cannot brush against a tree or bush without the risk of getting some on one, and they bite like furies.

drudgeries, which are still allotted to the existing slave-castes, but the Korāgars, who had been raised by Habāshika to the highest posts under his government, were stripped and driven towards the sea-shore, there to be hanged, but, being ashamed of their naked condition, they gathered the leaves of the nicki bush (which grows abundantly on waste places) and made small coverings for themselves in front. On this their executioners took pity on them and let them go, but condemned them to be the lowest of the low, and to wear no other covering than leaves. This wild tradition no doubt covers some actual occurrences; whether the invader and his host were foreigners, or whether he was a Hindoo Spartacus or Wat Tyler, who roused the servile races against oppression, must be doubtful; but that in some way, at a remote period, a revolution happened, in which the present degraded classes attained the upper hand, seems very probable; and this would account for the contempt and loathing with which those classes are now regarded, as well as for the rights and privileges which it may have been found prudent to concede, and for the tincture of latent superstitious dread which they still inspire. The Korāgars, it will be remembered, are said to have occupied the highest posts under the revolutionary government; they are now the lowest of the slave divisions, and regarded with such intense loathing and hatred that up to quite recent times one section of them, called Andy, or Pot-Korāgars, continually wore a pot suspended from their necks, into which they were compelled to spit, being so utterly unclean as to be prohibited from even spitting on the highway; and to this day their women continue to show in their leafy aprons a memorial of the abject degradation to which their whole race was doomed—a degradation as deep as their traditional eminence, attested by the magical influence still attributed to them, had been high—a memorial, moreover, that is now a mere useless encumbrance, retained when it might be discarded.

It may be noted that, according to the traditional accounts, when the invading hosts under Habāshika were in their turn overthrown and subjected, they accepted slavery under certain conditions that preserved to them some shadow of right. Whilst it was declared that they should be for ever in a state of servitude, and be allowed a meal daily, but never the means of providing for the next day's meal, each slave was ascripted to his master under the following forms, which have come down to our days, and were observed in the purchase or transfer of slaves within living memory:—

The slave having washed, anointed himself with oil, and put on a new cloth, his future owner took a metal plate, filled it with water, and dropped in a gold coin, which the slave appro-

priated after drinking up the water. The slave then took some earth from his future master's estate and threw it on the spot he chose for his hut, which was given over to him with all the trees thereon. When land was transferred the slaves went with it, and might also be sold separately; occasionally they were presented to a temple, for the service of the deity. This was done publicly by the master approaching the temple, putting some earth from before its entrance into the slave's mouth, and declaring that he abjured his rights and transferred them to the deity within. So in England, when a master abjured his right over a slave it was done publicly in the market-place, or in the church before the principal altar, when the lord, taking the slave's hand, offered it to the sheriff or priest, gave him a sword and laver, and told him that the ways were open to him and that he was free.

Rules were also laid down, with the Hindoo passion for regulating small matters, not only detailing what work the slaves should do, but what allowances of food they should receive, and what presents on certain festival occasions they should obtain from, or make to, the master. On marriages amongst themselves they prostrated themselves before the master and obtained his consent, which was accompanied with a small present of money and rice. The marriage over, they again came before the master, who gave them betel nuts and poured some oil on the bride's head. On the master's death his head slave immediately shaved his hair and moustache. There was also a list of offences for which masters might punish slaves, amongst which the employment of witchcraft, or sending out evil spirits against others, expressly figures; and the punishments with which each offence might be visited are specified, the worst of which are branding, and flogging with switches. There was no power of life and death, and in cases of withholding the usual allowance, or of punishments severer than prescribed, slaves might complain to the authorities. This mildness contrasts favourably with slave-usages in Europe and America.

Like all the slave-castes and lower races, the Korägars worship Mari Amma, the goddess presiding over smallpox, the most dreadful form of Parvati, the wife of Shiva. She is the most popular deity in Canara, represented under the most frightful form, and worshipped always with bloody rites. Goats, buffaloes, pigs, fowls, &c., are slaughtered at her temples; and their heads must be severed at a single blow by an *Asādi*, one of the slave-tribes from above the Ghauts. Although the Korägars, in common with all slaves, are looked upon as excommunicated and unfit to approach any Brahminical temple or deity, they have adopted the popular Hindoo festivals of the Gokalastmi or Krishna's birthday, and the Chowti. In the latter

the preliminaries and prayers must be performed by a virgin; in the former there is much feasting and drinking: they sit close together, and if a grain of rice should fall, accidentally or not, on a neighbour's platter, all cease eating, and the offender is liable to a fine and excommunication; for even these lowest of tribes do form castes, from which exclusion is inflicted for various offences, such as seduction of a girl or widow, intercourse with women of the castes beneath them, eating in the houses of those of inferior caste, and, amongst the Korägars, to enter the hut occupied by a single female after sunset brings degradation. Re-admission is usually effected by paying a fine and giving a feast to the community; and in some instances a row of seven small huts is built on a river-bank, set fire to, and the offender made to run over the burning sticks and ashes as a penance. But the principal and familiar worship of the Korägars, as of all the primitive village populations throughout India, is paid to local demons, evil spirits or goblins, called Bhutas, legions of which are spread over the country, some one usually becoming temporarily popular from one cause or another over a narrower or wider area. The special Bhuta of the Korägars is named Katu, for whom a spot is chosen under a *kasārcāna* tree. Two plantain leaves are placed there, and a heap of boiled rice coloured with turmeric laid on them, and prayers offered by the eldest Korägar. May, July, and October are the principal months for worship.

At the marriages of the Korägars, for which Sunday is an auspicious day, though Monday is for the other slave-castes, the bridegroom and bride, after bathing in cold water, sit on a mat in the former's house, with a handful of rice placed before them. An old man presides, takes a few grains of rice and sprinkles on their heads, as do the others present, first the males and then the females. The bridegroom then presents two silver coins to his wife, and must afterwards give six feasts to the community. Though amongst the other slave-castes divorce is allowed by consent of the community, often simply on grounds of disagreement, and the women may marry again, with the Korägars marriage is indissoluble, but a widow is entitled to re-marriage, and a man may have a second, and even third, wife, all living with him. On occasion of a birth the mother becomes unclean, and the hut is deserted by the other inmates for five days; on the sixth day the mother and child are restored to purity by a tepid bath, and the child is named. Rice and vegetables are presented to the mother, and several cocoa-nuts split in two, the under half being given to the mother, and the upper to the master, if the child be male, contrariwise if female. On death the bodies of all the slave-castes used to be burnt, except in cases of death by smallpox; this may have been to obviate the pollution of

the soil by their carcases when their degradation was deepest, but now, and from long past, burial is the universal rule. The master's permission is still asked, and after burial four balls of cooked rice are placed on the grave, possibly a trace of the ancient notion of supplying food to the ghost of the deceased.

All the Hindoos believe that the Korāgars have a language of their own, understood only by themselves, but it seems doubtful whether this is anything more than an idiom, or slang, such as is current amongst almost every caste and profession in India. It may be noted that the Korāgars alone of all the slave or other castes eat the flesh of alligators, and they share with one or two other divisions of the slaves a curious scruple or prejudice against carrying any four-legged animal, dead or alive; this extends to anything with four legs, such as chairs, tables, cots, &c., which they cannot be prevailed upon to lift unless one leg be removed. As they all work as coolies, this sometimes produces inconvenience. The only reason assigned for this scruple is lest they should be treated as deformed.* It only remains to add that during my last sojourn at Mangalore, after a considerable interval of absence, three years ago, the number of women wearing the leaf aprons behind seemed perceptibly to have diminished, and very possibly the custom may in a generation or two become extinct.†

Common Korāgar Names.

Male.—Jibbu, Chanda, Purala, Timmu, Tanya, Toma, Tukra, Angāra, Tāwāda.

Female.—Korāpūlu, Mawa, Timpalli, Chantri, Tukri.

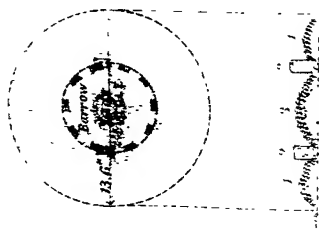
Designations of the fifteen slave-castes, in order of precedence.

Hambatar	Merar	Bākada, with 3 subdivisions:
Pānar	Korajar	1. Chuḡana Bākada
Hasalar	Asādi	2. Turibina Bākada
Parawar	Holiya	3. Gōddina Bākada
Bélar, or Medarar	Madiga	Kāpāta Korāgar
Butadar	Nuliga	Soppu Korāgar

Even the three Bākada subdivisions may not intermarry.

* It may probably fall within the category of remarkable customs, collected by Mr. Tylor, in his "Early History of Mankind," chap. x., for which no reason can be assigned. A somewhat similar scruple obtains amongst the Bygas of Central India, whose women are not allowed to sit or lie upon any four-legged bed or stool.

† In the Chānda district of the Central Provinces the women in the wilder tracts wear no clothes at all, but only a string round the waist, whence every morning they suspend a bunch of leaves before and another behind. The practice is reported to exist in the Kōl country, and also in Orissa, where it is traced up to the command of one of their deities to reprove women for their pride.—*Rev. S. Hislop.*



Plan and
Section of barrow
stone circle and
annular mound

Fig 1.

ABNEY MOOR

- 1. annular mound
- 2. stone circle
- 3. barrow in centre

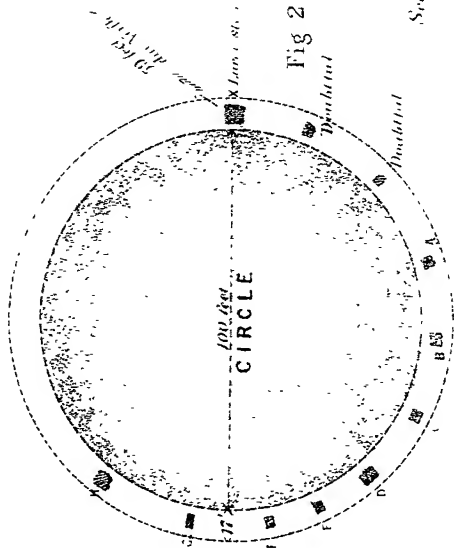


Fig 2 WET WITHINS MOOR

Scale, 50 feet to an inch

STONE CIRCLES & BARROWS, NEAR CASILETON

The following paper was read by the Author :—

NOTES on some TUMULI and STONE CIRCLES near CASTLETON, DERBYSHIRE. By ROOKE PENNINGTON, LL.B., F.G.S. [With Plate xxvi.]

DURING the last five or six years I have from time to time engaged myself, in company with Mr. John Tym, of Castleton, in opening a number of the barrows which still remain unexplored in that picturesque neighbourhood.

These burial places of our predecessors occur most frequently upon the tops of hills, often designated "lowes," a well-known Anglo-Saxon (English) term for burial mound, but not seldom exist still in the valleys, and it may be doubted whether their comparative scarcity in the dales is not the effect of cultivation. The barrows are by no means confined to the Mountain-Limestone heights; they are equally distributed over those of the Millstone-Grit moors which are contiguous to fertile valleys; though those in the latter position seldom contain remains as well preserved as the limestone tumuli. No doubt the greater dryness of the latter has something to do with this.

The first barrow the contents of which I will describe, is one situated on the top of Elden Hill, about four miles from Castleton. Elden Hill is celebrated for having in its side the famous chasm, known as Elden Hole, a descent into which I made last summer. The mound was circular, forty-nine feet in diameter, and about five feet high in the centre. Mr. Bateman, the well-known Derbyshire archaeologist, dug into its upper portion in 1856, finding two interments.* He left, however, the greater portion of the mound intact. Upon cutting into the northern side of the mound, we soon came upon numbers of rats' bones,† and snail-shells (*Helix nemoralis*), and then upon an occasional human bone, possibly dragged by rats into its position. The mound had never been disturbed before on this side. After working some time and removing some large stones, apparently supports for looser materials within and above, human bones became more plentiful, and masses of rats' bones—amongst which an occasional finger or wrist-bone of man occurred—became frequent. About four feet into the mound, embedded in earth, and at a depth of about a foot and a half, we came on some bones and teeth of the horse; the bones appeared to be very much diseased. About a foot further on, and a foot deeper, two feet and a half from the surface, was a left antler of red deer, which had been worked or shaved off at one place for some purpose. It was firmly fixed in the earth, and very rotten. Shortly

* "Ten Years' Diggings in Celtic and Saxon Grave Hills," p. 87.

† The water-vole or water-rat (Owen), *Arvicola amphibia*, mentioned below.

after, at a greater depth, we came upon another portion of red deer antler, and some teeth of that animal, one very large.

When within about a foot of the centre of the mound, and at a depth of about three feet and a half from its surface, we opened into a large cist. (This cist was on our left, to the north-west of the centre.) We found that it was the same cist into which we had dug from the south-west in November, 1869. It was of large extent, and in it we found fragments of a rude urn, ornamented with the finger-nail and a sharpened stick. It had been crushed by falling earth, but the whole of it was there, though very fragile. Near it was a number of human bones, evidently of an old man.

We were now at the opposite side of this cist, but found nothing in it, save a bone of the horse. Proceeding with our excavation to the centre, we noticed that the subsoil disappeared, and that upon clearing out the *débris* of the mound we were on the rock. That we were, in fact, in a shallow grave, became manifest; rats' bones became more plentiful than ever, in fact, they came out by spadefuls. The presence of these bones in such large quantities may be explained by supposing that the rats, possibly resorting, in the first instance, to the barrows for the purpose of devouring the bodies, found them agreeable places of residence, and took up their quarters from time to time amongst the loose stones of the tumuli. Seeing that it is the water-vole (*Arvicola amphibia*) which is thus found, it seems strange that in this, as in many cases, the barrow stood on a hill remote from any water whatever, the very streams in the neighbourhood being all subterranean (the formation is the mountain limestone). I can only suppose that considerable changes have taken place, and that formerly the growth of forests over the now treeless wastes, and the underwood accompanying, made the now arid valleys humid and swampy. Even in the middle ages, the district of the Peak Forest, in which this barrow is situate, was much better wooded than it is now.

To return to the grave. In it was a tolerably well-preserved skeleton of some young person, probably, I should say, not more than seventeen years of age. The body had been placed on its left side, in a contracted position, knees into chin, the face looking north. The skull was protected by three stones, with a cap-stone. No regular cist, however, protected the remainder of the body; there were simply a number of large pieces of limestone irregularly piled around it.

No implement was found, except what seemed to be a fragment of a bone: one, and only one, little bit of unglazed pottery. A number of animal bones accompanied the interment, showing

the funeral feast to have consisted of *Bos longifrons*, horse, and boar or pig: the latter very numerous.

The skull was long and narrow, and well developed. The teeth were well preserved. The ribs, vertebræ, &c., had nearly all disappeared; the long bones were, however, there, and served to show the position of the body. The cist previously mentioned, and Mr. Bateman's finds, were respectively at considerably higher levels. This interment was in the exact centre of the mound, and beyond all question the primary one.

The position of the ring of stones which, I have said, we came across in excavating, and which we subsequently found extended all round the outer fringe of the barrow, although concealed by the earth, and the symmetry also of the mound, show, I think, that it was altogether built up when this primary interment was made. We have, therefore, the funeral rites performed with all the barbaric pomp of feasting, and a large mound laboriously piled up, upon the occasion of the death of a young person who must have possessed some position other than that won by prowess or skill, which claimed these attentions. This would point to a recognition of the superior rank of a chief's family, for we know that young persons were not always thus honoured, and indeed it would be absurd to expect that savages would in every case expend this labour over the young. I do not, of course, mean to say that this is a solitary instance of this kind, but it is a very clear and conclusive one.

The remaining finds were not important. They comprised two collections of human bones, in heaps, with one of which was a flint chip and some quartz pebbles, the latter indicative, I think, of a late interment. Both the collections of bones were associated with the bones of the red deer. A portion of a jet ornament was also found, but with what particular interment it had been cast into the tumulus it was impossible to say, but probably with the primary one just described.

On the top of the hill known as Siggett (a corruption of Sidegate), just to the south-east of Castleton, was a large barrow about forty feet in diameter, though not more than three feet and a half in height. Beginning to dig on the north side we met with occasional human bones, teeth, and flint flakes. Throughout the whole mound the bones of the *Arvicola amphibia* were exceedingly abundant. Getting near to the centre, one foot below the surface, was an inverted urn of the usual rude type, made by hand, and ornamented with impressions of the thumb-nail. It was completely crushed in, but had been filled with burnt bones. A little to the right, and somewhat nearer the centre, was a fine skeleton. It was three feet and a half below the surface, and the natural soil had been slightly scooped

out to form a resting-place for it. It had been laid upon its left side in a contracted position, its head to the north-west. With it were a bronze ring, a jet bead, and a quartz pebble. The skeleton of a child was buried very near to it, and apparently with it. Both these skeletons were buried rather than encisted. There was no indication of any attempt to protect them from the earth and rock of the mound. Independently of the bronze ring, the quartz pebble points, I think, to a period later than the neolithic age, or at any rate than the earlier portion of that age.

Of nine cases in which the finding of quartz pebbles is specially recorded by Mr. Bateman, all, with one exception, present indications of belonging to a late period, and that exception is of doubtful age. Two of them are certainly, and two are almost certainly, subsequent to the introduction of iron. Quartz pebbles do not naturally occur near Castleton. I should think it unlikely that they were brought thither simply to be used as sling-stones, and still more unlikely that if this particular pebble was for that purpose, that the deceased should have been sped on her journey with but a single missile.

Other indications pointing to the comparative lateness of interments containing quartz pebbles, may it not be that they were deposited as amulets? Just as, no doubt, the practice of depositing flint flakes with the dead, a custom prevailing down into the iron age, arose from a superstitious veneration for the qualities of that stone, which in earlier times had been the sole source of all utensils, so may it be with quartz pebbles. These appear to be placed just as the flint flakes are placed, where there can be no use for them, and where there is great difficulty in assigning any other than a superstitious motive for so depositing them.

To return to the barrow. The skeleton appeared to be that of a female, considerably advanced in life. The skull was of the round form, but so rotten that it fell to pieces. The teeth were good, but worn flat. The bones were well preserved, but presented no peculiarity worthy of notice. Near to this skeleton, but not so placed as to be identified as appurtenant to it, was a well-chipped celt. There were so many interments in the mound that this might easily have belonged to some other than the one in question. Three or four feet from the skeleton, to the north of it, and about two feet and a half below the surface, was a deposit of burnt human bones, unaccompanied by any implement. At about the same distance from the skeleton, on the western side of it, was another urn, buried at about two feet below the surface. This had been a very large and fine urn; the diameter of its mouth was about eighteen

inches. It was crushed, but the rim was nearly perfect. The ornamentation had been effected by pressing twisted grass on the clay before burning. The urn was filled with burnt bones; no implement accompanied it.

Some distance to the south of the skeleton, at about three feet and a half below the surface of the barrow, and on the natural surface of the ground, were the burnt bones of some animal, accompanying the skeleton of a boy or girl. With this interment was a quartz pebble, and also two flint flakes. At the centre of the mound, nearly four feet below the surface, resting on the rock, was another urn, also much crushed. We succeeded in putting some portion of it together, and found that it was perfectly plain, no pattern or ornament having been impressed upon it. It was completely full of bones, much more thoroughly consumed than is usual, or than the other burnt bones in the same tumulus. Both human and animal bones could, however, be detected, and all appeared to be burnt in an equal degree. This would seem to show that the corpse was not burnt until after the funeral feast was concluded, and that then the bones of the animals eaten were cast at the same time and into the same fire with the body.

This is one of those barrows which have led me to the conclusion that, in Derbyshire, at any rate, no connection can be established between the neolithic age and contracted burial, and the bronze age and incineration. For instance, in this barrow we have four instances of incineration without any bronze implement accompanying them; and though this negative fact is not worth very much in leading us to a conclusion, yet the occurrence in the same mound of contracted burials associated with bronze, is one clear instance in support of my observation.

The barrows explored in the Derbyshire district show that the percentage of those in which contracted burial occurs with bronze is almost the same—very little less than those in which incineration and bronze go together. Besides this, the two modes of interment over and over again occur in the same mound, and very often the burnt one is the more ancient. It seems certain that in this district the two customs were in force at the same time, that both existed in the age of stone, and both continued in vogue after the introduction of bronze.

On the moors between Castleton and Eyam several circles and barrows of great interest remain; to three of these I would draw special attention. Upon Abney Moor is, or rather was, a sepulchral circle, presenting one of the several types of burial by cremation. Incinerated bodies are found sometimes in urns, sometimes deposited in cists, frequently placed, without protection from the superincumbent mound, upon the natural surface

of the ground. The circle-tumulus on Abney Moor differed from any of these in containing a quantity of burnt bones piled up upon a large, flat piece of sandstone (the "slate" of the locality), and screened from the earth, peat, and stones of which the barrow was composed by a large piece of rock. The mound was about twenty feet in diameter, and five feet and a half high. Outside and around was a rampart of earth about a foot high, the outside diameter of which was about fifty feet (fig. 1, Pl. xxvi.). Upon this rampart or annular mound were ten large stones, each upright and about three feet in height, placed along the rampart's inner margin. The entire sepulchre presented a most interesting relic of antiquity, being quite perfect, and standing very conspicuously out amidst the dreary moorland in which it was situated.

Upon digging into the mound, numerous fragments of bone, both burnt and unburnt, appeared, and also a few fragments of pottery. No entire urn was found except one, which, I believe, was whole, but which was unfortunately completely broken by the men before I got to the place. It appears to be of superior make to the ordinary barrow pottery. In the exact centre of the tumulus was found the interment I have referred to. The mass of burnt bone was considerable; it had been placed with some care upon the slab, though, as observed, no regular cist enclosed it. The traces of handicraft accompanying it were flint flakes, a chert flake, and some jet beads, some amber beads, and a very good arrow-head. The beads had evidently formed portions of necklaces. That the funeral fire had been lit upon the spot was manifest from the numerous pieces of burnt grit-stone and sandstone found upon the natural surface beneath the site of the barrow.

In the immediate vicinity of the circle are a number of pit dwellings, whose artificial character is clearly shown by their not being simply depressions in the peat and subsoil, but actual excavations in the rock itself. Within a short distance of this sepulchral circle are two other circles of a very different character. With great respect to some who hold other views, I feel quite sure that many of our megalithic circles, particularly the larger ones, are not sepulchral, but devotional. Being concerned in exposing the absurdity, or rather the want of foundation for calling stone circles Druidical, some archæologists seem to have gone to the other extreme, and so have denied that any of the circles are temples at all. Now the two other circles I have just mentioned are most remarkable contrasts to the Abney Moor one, and are clearly non-sepulchral.

On Offerton Moor is a circular rampart of earth. The outside diameter is eighty-nine feet one way, eighty-three feet the

other; the rampart seven feet wide, and two feet and a half high. About 100 feet away to the north-east is a large ruined barrow of the round form. No stones remained, but that the rampart once supported the megaliths of a circle is pretty clear, for the barrow was evidently destroyed to build a neighbouring wall many years ago, and the stones of the circle would go at the same time.

On the Wet Withins Moor is a very fine stone circle (fig. 2, Pl. xxvi.). The rampart is seventeen feet wide, the inside diameter is about 100 feet, the outside diameter 116 feet. The circle, probably, originally consisted of fifteen or sixteen stones; eleven are still standing. The stones stand at irregular intervals; the longest is on the north-east, and is nearest to the barrow to be presently described. This stone stands perpendicularly, and is shaped like a chair. The other stones are flat, varying in width from one foot to four, and inclining inwards at angles from forty to sixty degrees. The space between the stones varies from twelve to twenty-one feet.

To the north of the circle, and fifty-nine feet from it, is a large oblong barrow, eighty-four feet long by forty-six feet wide (see fig. 2, Pl. xxvi.), which was explored from time to time during the last century, though very meagre accounts of the results have been handed down. The north-eastern axis of the circle, which passes through the large stone mentioned as nearest to the barrow, is parallel with the principal axis of the tumulus.* This will be seen from the diagram (fig. 2, Pl. xxvi.). Now, within neither of these circles is there any trace of burial. Particularly in the more interesting one, the Wet Withins circle, the area within its circumference is entirely undisturbed, except where a large stone once stood in its centre. Nobody could have been buried beneath the rampart, and it is of course antecedently improbable that such should have been the case. Near each circle is the large burial mound just described, and evidently connected with it.

Now these circles are certainly not sepulchral, else the mounds would have been inside them, as in the Abney Moor circle. If not sepulchral, what are they? Is it not probable that a people of the intelligence which the peoples of the neolithic and bronze ages in England must have possessed would have a religion? The absence of religion is a characteristic of the most degraded races. If a religion, why not temples? and if temples, where else should the temples be found but on these moors, where are the pit-dwellings and hill forts of our out-of-door predecessors, who, almost ignorant of house building, must have worshipped,

* There is a sketch of this circle, by Sir Gardner Wilkinson, in the "Reliquary," vol. i. p. 159.

if they worshipped at all, in the open air? And does not the proximity of the tumuli to these circles seem to show that the dead were buried near to the sacred place, just as to-day the churchyard is the place of the Christian sepulchre?

In addition to the one described, there were formerly a large number of barrows, many of which have been ruthlessly destroyed by stone-getters on the Abney moors. Several I have, however, explored, with varying success. In many, all traces of burial had well-nigh disappeared; a fragment of a decayed urn, a few bits of bone, were all that remained, save flints, flakes, or perhaps an arrow-head or celt. The results I have obtained from other localities in this neighbourhood—from Oxlow, Shatton, Alport, and elsewhere—I do not describe, because they were unimportant, except in relation to matters not within the scope of this paper. But I may say that traces of the prehistoric age are numerous throughout North Derbyshire and on the surface of the country, as, for instance, on Mam Tor, Lose Hill, Rushup Edge, and other heights near Castleton, where flint flakes and implements are pretty frequently found. The former (the flakes) are common; and inasmuch as there is no flint to be found naturally within fifty miles at least of the place, each bit is an indication of the agency of man in transporting it to the place where it is now picked up.

EXPLANATION OF PLATE XXVI.

Fig. 1.—Plan and section of stone circle, barrow, and annular mound, on Abney Moor, near Castleton, Derbyshire.

Fig. 2.—Plan of stone circle and oblong barrow on Wet Withins Moor, near Castleton.

DISCUSSION.

MR. WALHOUSE, in support of Mr. Pennington's view that some stone circles may have been intended for purposes other than sepulchral, probably devotional, observed that in India, especially on the Nilgiri Hills (Madras Presidency), he had seen some circles, though few, which showed no traces of enclosing interments of any description. Sepulchral tumuli surrounded by single, double, or even triple circles are indeed abundant; but such circles were very different in character from the few first referred to, which are far more extended, wider in diameter, and usually show traces of an entrance at the east side, and neither contain, nor are near, any interments or sepulchral tumuli.

MR. JEREMIAH could not agree with that part of Mr. Pennington's paper where he seems to state that the so-called Druidical circles of Derbyshire and elsewhere must be considered as having been erected for some more important purpose than of being sepulchral—

in fact, as having been used for religious purposes, which, to his mind, conveyed the conclusion of their being Druidical. Now, interesting as the finds of dogs' bones and remains of horses, &c., may be in the exploration of the tumuli in the neighbourhood of the Derbyshire circles, he thought that the ever-recurring Druidical hypothesis deserved a passing attention, as it impeded the scientific study of the megalithic remains in Britain. Since the time of Dr. Stukeley downwards, archæology has always been found in conjunction with the ritual of a Druidical worship, which appears, at least, to be without any real foundation: and yet we are to resign our judgment upon the mere statement of Cæsar's, of there having been Druids in Gaul: and, speaking merely from hearsay, he leads one to infer that the mysterious arts they practised came from Britain. It must not be forgotten what incredible absurdities he indulged in with regard to the beasts inhabiting the Hercynian Forest, and his generally loose statements in reference to the tribes he conquered. The successive writers, as Strabo, Pomponius, Mela, and Tacitus, are all vague in their description of the Druids and their ritual. The most important statement of Cæsar's is, that the Druids were acquainted with the Greek characters: but here is the weakness, for the word "*græcis*," according to Scaliger, is an interpolation by a modern commentator: if not, then it is impossible to account for the curious fact that Divitiacus, the most learned of the Druids in Gaul, understood no Greek, which caused Cæsar to converse with him by an interpreter. This is the statement made by Cicero. I may here observe that this line of argument is older than some writers imagine, for I have found it in a "*Short Dissertation about the Mona of Cæsar and Tacitus*," by Thos. Brown, 1702. Having endeavoured to show a few objections to even the religious purposes of stone circles generally, he would rather suspend his judgment, and profess to know nothing absolute about the origin of the stone circles in Britain, than accept the *ipse dixit* of the author of the paper just read.

Mr. A. L. LEWIS said it gave him great pleasure to find so able an archæologist as the author of the paper evidently was, coming forward to support the view that all stone circles were not sepulchral; but he was rather surprised that he had not mentioned, in confirmation of this view, the great circle at Arberlows, in Derbyshire. The north-easterly bearing, from the circles, of the barrows, mentioned by the author, was a most interesting circumstance. It was not only at Stonehenge, but in other large British circles, that he (Mr. Lewis) had found a special reference to the north-east to exist, and it seemed from the paper to exist, though in another form, in Derbyshire. Mr. Jeremiah had been rather severe upon any who should attribute these monuments to the Druids, but there could be little doubt that most of them belonged to the Celts, and it was evident, from the classic writers, that nothing bearing, however remotely, on religion could have been done amongst the Celts without the sanction of the Druids. Mr. Jeremiah had, indeed, endeavoured to persuade them that those writers did not

know what they were writing about, or at least that their meaning could not now be understood ; but Cæsar, in particular, had seen the Druids in Gaul, and would have seen them in Britain had the military part of the population permitted him to do so ; and he had made statements about them which were as precise and of as great authority as any other part of his works, although they did not identify them with the rude stone monuments. This, however, was a question which was too wide to be discussed on that occasion.

Mr. J. E. PRICE remarked upon the value of the paper, as recording certain facts of interest which had come within the immediate observation of the author. The simple records of such facts were frequently of greater import than lengthened disquisitions on doubtful theories. While describing no great novelty, the paper was a contribution to materials already collected by Mr. Bateman in his "*Derbyshire Researches*,"* and by Mr. L. Jewitt, F.S.A., who, both in the pages of his "*Reliquary*," and in "*Grave Mounds and their Contents*," had so fully discussed the mass of information connected with the burial customs of the early races of Derbyshire. The frequent presence in barrows of the small bones of rats and mice had often been recorded.† The rat referred to was the "*Arvicola*," water-vole, or water-rat, which, as a native of the county, was known to have selected these old barrows for its winter home. The quartz pebbles mentioned by Mr. Pennington had also often been observed. In the Wiltshire barrows they had been thought by Sir R. Colt Hoare to have been used for slinging purposes.‡ At the same time, they may have been preserved as amulets or charms. In Anglo-Saxon graves it was no uncommon thing to find small balls of crystal: these, by early antiquaries, had been connected with magical ceremonies. At times, however, they had been observed with fastenings of the precious metals, and adapted for suspension as personal ornaments.§ Some reference had also been made to the respective periods to which the barrows and stone circles were to be assigned, as judged by the various distinctive forms of burial. Mr. Price ventured to think that the age of all our megalithic monuments was most uncertain. Who had constructed them, and what was their object, had not as yet been clearly ascertained. They were not referred to by Cæsar, or any other classic writer. If post-Roman, this was explained, if otherwise, it was singular that even in a county like Kent no reference to its stone monuments could be found. Kent was a county with which Cæsar and his generals must at least have been familiar.

* See '*The Opening of Tumuli, principally at Middleton, by Tolgrave, Derbyshire, from 1821 to 1832*,' by W. Bateman, F.S.A., in "*Collectanea Antiqua*," by C. R. Smith, F.S.A. Vol. i. p. 49.

† See, for examples, "*Crania Britannica*," by Dr. B. Davis.

‡ "*Ancient Wiltshire*," Part I p. 76, by Sir R. C. Hoare.

§ See "*Inventorium Sepulchrale*," by the Rev. Bryan Faussett, 1856.

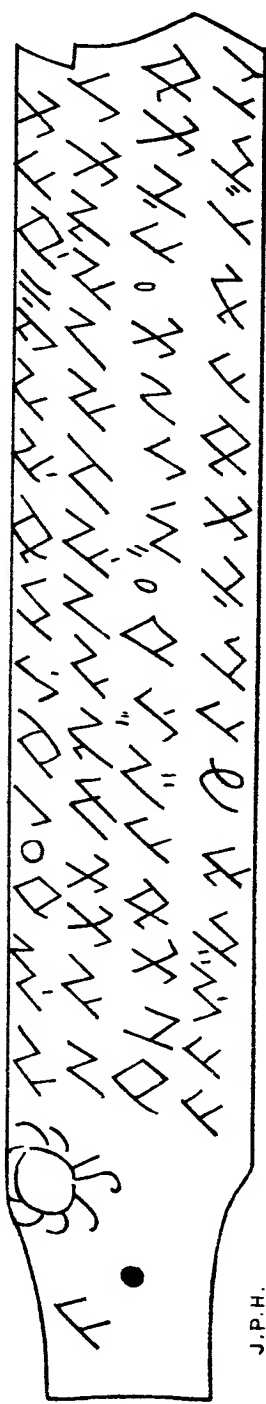
REJANG ALPHABET.

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PHŒNICIAN CHARACTERS

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PART OF A REJANG M.S. ON BAMBOO.
(FROM SUMATRA)



J.P.H.

(1 FT IN. X 1 1/4 IN.)

SIGNS " V A / \ > C, O.

DECEMBER 22ND, 1874.

Professor BUSK, F.R.S., *President, in the Chair*.

The minutes of the previous meeting were confirmed.

GEORGE LAMBERT, Esq., F.S.A., of Coventry Street, and JOHN HARTE, Esq., of Shaftesbury Hall, Battersea Park, were elected members.

The following list of presents was read, and thanks were voted to the donors:—

FOR THE LIBRARY.

From the AUTHOR.—From the Indus to the Tigris. By H. W. Bellew, C.S.I.

From the AUTHOR.—The Shepherd Kings of Egypt. By the Rev. John Campbell, M.A.

From the EDITOR.—Revue Scientifique. Nos. 24 and 25, 1874.

From the ANTHROPOLOGICAL SOCIETY OF VIENNA.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Band iv. Nos. 7, 8, and 9.

From the INSTITUTE.—Verhandlungen der K. K. Geologischen Reichsanstalt. Nos. 12 and 13, 1874; Jahrbuch, ditto, Band 24, No. 3.

From the IMPERIAL ACADEMY OF SCIENCES OF VIENNA.—Sitzungsberichte (philos.-histor.). Bands 75 and 76, Heft 1-3; ditto Math.-naturw., 1873, I. Abtheil. Nos. 8-10; II. Abtheil. Nos. 8-10; III. Abtheil. Nos. 6-10; 1874, I. Abtheil. Nos. 1-3; II. Abtheil. Nos. 1-3.

From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—Zeitschrift für Ethnologie. No. 5, 1874.

From the SOCIETY.—Sitzungsberichte der Physikalisch-Medicinischen Societät zu Erlangen. Heft 6, 1874.

From the EDITOR.—Nature (to date).

Mr. J. PARK HARRISON exhibited tracings of late Phœnician characters from Sumatra, and read the following note:

NOTE ON PHŒNICIAN CHARACTERS *from* SUMATRA. By J. P. HARRISON. [With Plate xxvii.]

THESE characters are said to be still in use in the districts of Rejang, Lemba, and Passummah, in Sumatra. Manuscripts on thirty-one tablets formed of split bamboos were, it appears, acquired many years ago by the old East India Company, and are now in the library of the India Office. Nearly the whole of the letters inscribed on the convex surfaces of the bamboos are identical in form with Phœnician characters mostly

of a pure period, and afford a very remarkable instance of the survival of an early form of writing adopted by a non-literary race.

Marsden states that the letters of the Rejang alphabet consist of twenty-three characters. Corrected forms are given in his "History of Sumatra," third edition, and letters of the same form and number are found upon the margins of twenty-three of the bamboo tablets. This confirms Marsden's statement regarding the numbers of the characters, and shows that there is an unbroken set of tablets. Eight others have *two* letters each on the margins of the tablets—duplicates of the first eight letters of the Rejang alphabet.

In the fac-simile (Pl. xxvii.), which is derived from a photograph of the first tablet, it will be noticed that there are several forms which are not found in the Rejang alphabet. They are letters with occasional affixes or signs attached to them on the left side, which serve, according to Marsden, to alter the terminal sounds. There are eight of these signs (see plate). Examples of their use occur in the eighth and eleventh characters (from the commencement) of the first line of the manuscript, where the seventh and fourteenth letters of the alphabet appear with the fourth sign attached to them. Also, in the second line, the sixth and fourteenth characters have the same sign attached to the fifteenth letter of the alphabet. Two letters, viz. Nos. 11 and 22 are distinguished from No. 4 by slight additions. It really seems as if Nos. 11 and 22 were originally of the same form as No. 4 (the three thus answering to the Phœnician characters B, D, and R), but that the difficulty of distinguishing letters so much alike led to the addition of permanent suffixes.—The twentieth letter of the Rejang alphabet is the only one that has not been identified.*

It should be mentioned that the order of the letters is not the same as in Phœnician, and the letters themselves are generally reversed; their values, also, are different.

Both in Java† and Sumatra‡ written traditions, mixed with fable, refer to the arrival of ships in remote times, and at two different epochs, from the Red Sea and the Persian Gulf—in the one case at a time when vessels still coasted round the Bay of Bengal; in the other, in the age of Alexander, who is said to have built a bridge "in the sea," which may mean that ships commanded by some of his officers arrived direct from India. Three of his descendants are also said to have become kings of Palinbang, &c. The ships would have been manned principally by Phœnician sailors. Stript of legendary matter, there seems nothing contrary to, or incon-

* The tenth and seventeenth may be forms of "Ph" and "Th."

† Sir Stamford Raffles' "History of Java," p. 85.

‡ Marsden's "Sumatra," p. 3, note (2nd Ed.).

sistent with, history in these traditions, which consequently possess a certain value apart from the evidence afforded by the manuscripts. The importance attending the identification of these characters is principally ethnographical.

EXPLANATION OF PLATE XXVII.

Portion of a bamboo tablet with incised characters, from Sumatra; lithographed from a photograph. Also, Rejang alphabet, and Phœnician forms for comparison.

The following paper was read by the author:—

ON EARLY MODES *of* NAVIGATION. By Col. A. LANE FOX.

IN the paper which I had the honour of reading to this Institute at Bethnal Green, I spoke of the general principles by which I was guided in the course of inquiries, of which the present paper forms a section. I need not, therefore, now refer to them further than to say that the materials for this paper were collected whilst writing a note to my catalogue *raisonné* relating to the case of models of early forms of ships.

In inquiries of this nature it is always necessary to guard against the tendency to form theories in the first instance, and go in search of evidence to support them afterwards. On the other hand, in dealing with so vast a subject as Anthropology, including all art, all culture, and all races of mankind, it is next to impossible to adhere strictly to the opposite of this, and collect the data first, to the exclusion of all idea of the purpose they are to be put to in the sequel, because all is fish that comes into the anthropological basket, and no such basket could possibly be big enough to contain a millionth part of the materials necessary for conducting an inquiry on this principle. Some guide is absolutely necessary to the student in selecting his facts. The course which I have pursued, in regard to the material arts, is to endeavour to establish the sequence of ideas. When the links of connection are found close together, then the sequence may be considered to be established. When they occur only at a distance, then they are brought together with such qualifications as the nature of the case demands. Other members of this Institute have followed the same course in relation to other branches of culture, the object being to lay the foundation of a true anthropological classification, without seeking either to support a dogma or establish a paradox. This is, I believe, the requirement of our time and the necessary preliminary to the introduction of a science of Anthropology.

Whilst, however, deprecating the influence of foregone conclusions, there are certain principles already established by science which we cannot afford to disregard, even at the outset of inquiries of this nature. It would be sheer moonshine, in the present state of knowledge, to study Anthropology on any other basis than the basis of development; nor must we, in studying development, fail to distinguish between racial development and the development of culture. The affinity of certain races for particular phases of culture, owing to the hereditary transmission of faculties, constitutes an important element of inquiry to be weighed in the balance with other things, just as the farmer weighs in the balance of probabilities the nature of the soil in which his turnips are growing; but when particular branches of culture do run in the same channel with the distribution of particular races, this is always a coincidence to be investigated and explained, each by the light of its own history. It would be just as reasonable to assume with the ancients, that the knowledge of every art was originally inculcated by the gods, as to assume that particular arts and particular ideas arise spontaneously and as a necessary consequence of the possession of particular pigments beneath the skin.

Nobody doubts that there must be affinities and interdependencies between the race and the crop of ideas that is grown upon it; but the law *Ex nihilo nihil fit* is as true of ideas as it is of races, and in the relations between them it is as true and has the same value, neither more nor less, than the statement that potatoes do spring out of the ground where no potatoes have been sown. To study culture is, therefore, to trace the history of its development, as well as the qualities of the people amongst whom it flourishes. In doing this it is not sufficient to deal with generalities, as, for example, to ascertain that one people employ bark canoes, whilst another use rafts. It is necessary to consider the details of construction, because it is by means of these details that we are sometimes able to determine whether the idea has been of home growth or derived from without. The difficulty is to obtain the necessary details for the purpose. Travellers do not give them, as a rule, especially modern travellers. The older books are more valuable, both because they deal with nations in a more primitive condition, and also because they are more detailed; books were fewer, and men took more pains with them; now the traveller writes for a circulating library, and for the unthinking portion of mankind, who will not be bothered with details. I have been careful to give the dates to the authors quoted. But we must endeavour to remedy this evil before it is too late. The "Notes and

Queries on Anthropology,"* published by the Committee of the British Association, are drawn up with this object. It is to be hoped that they will receive attention, but I fear not much, for the reasons already mentioned; the supply will be equal to the demand. As long as we have a large Geographical Society and a small Anthropological Society, so long travellers will bring home accurate geographical details, abundance of information about the flow of water all over the world, but the flow of human races and human ideas will receive little attention. With these preliminary remarks I pass on to the subject of my paper.

Modes of Navigation.

Following out the principle adopted in Parts 1 and 2 of my Catalogue, of employing the constructive arts of existing savages as survivals to represent successive stages in the development of the same arts in prehistoric times, it may be advisable, in order to study the history of each part of a canoe or primitive sailing vessel, to divide the subject under five heads, as follows: viz.—(1) Solid trunks or dug-out canoes, developing into (2) Vessels on which the planks are laced or sewn together, and these developing into such as are pinned with plugs of wood, and ultimately nailed with iron or copper; (3) Bark canoes; (4) Vessels of skins and wicker-work; (5) Rafts, developing into outrigger canoes, and ultimately into vessels of broader beam, to which may be added rudders, sails, and contrivances which gave rise to parts of a more advanced description of vessel, such as the *oculus*, *aplustre*, *forecastle*, and *poop*.

1. *Solid trunks and dug-out canoes*.—It requires but little imagination to conceive an idea of the process by which a wooden support in the water forced itself upon the notice of mankind. The great floods to which the valleys of many large rivers are subject, more especially those which have their sources in tropical regions, sometimes devastate the whole country within miles of their banks, and by their suddenness frequently overtake and carry down numbers of both men and animals, together with large quantities of timber which had grown upon the sides of the valleys. The remembrances of such deluges are preserved in the traditions of many savage races, and there can be little doubt that it was by this means that the human race first learnt to make use of floating timber as a support for the body. The wide distribution of the word signifying ship—

Division of
the subject.

Solid
trunks and
dug-out
canoes.
Origin.

* "Notes and Queries on Anthropology, for the use of travellers and residents in uncivilised lands," drawn up by a Committee appointed by the British Association for the Advancement of Science. Stanford, Charing Cross, 1874.

Latin, *navis*; Greek, *ναος*; Sanskrit, *nau*; Celtic, *nao*; Assam, *nao*; Port Jackson, Australia, *nao*—attests the antiquity of the term. In Bible history the same term has been employed to personify the tradition of the first shipbuilder, *Noah*.

It is even said, though with what truth I am not aware, that the American grey squirrel (*Sciurus migratorius*), which migrates in large numbers, crossing large rivers, has been known to embark on a piece of floating timber, and paddle itself across (Wilson, "Prehistoric Man").

N.America.
Log of
wood.

The North American Indians frequently cross rivers by claspings the left arm and leg round the trunk of a tree, and swimming with the right (Steinitz, "History of the Ship").

Pointed
log,
N. W.
Australia.

The next stage in the development of the canoe would consist in pointing the ends, so as to afford less resistance to the water. In this stage we find it represented on the N.W. Coast of Australia. Gregory, in the year 1861, says that his ship was visited on this coast by two canoes, which had paddled off "on logs of wood shaped like canoes, not hollowed, but very buoyant, about seven feet long, and one foot thick, which they propelled with their hands only, their legs resting on a little rail made of small sticks driven in on each side." Mr. T. Baines, also, in a letter quoted by the Rev. J. G. Wood, in his "Natural History of Man," speaks of some canoes which he saw in North Australia as being "mere logs of wood, capable of carrying a couple of men." Others used on the north coast are dug out, but as these are provided with an outrigger, they have probably been derived from New Guinea. The canoes used by the Australians on the rivers consist either of a bundle of rushes bound together and pointed at the ends, or else they are formed of bark in a very simple manner; but on the south-east coast, near Cape Howe, Captain Cook, in his first voyage, found numbers of canoes in use by the natives on the sea-shore. These he described as being very like the smaller sort used in New Zealand, which were hollowed out by means of fire. One of these was of a size to be carried on the shoulders of four men.

Dug-out,
West
Australia.

Excavation
by fire.

It has been thought that the use of hollowed canoes may have arisen from observing the effect of a split reed or bamboo upon the water. The nautilus is also said to have given the first idea of a ship to man; and Pliny, Diodorus, and Strabo have stated that large tortoise-shells were used by the first races of mankind (*Pict. Bible—Isaiah*). It has also been supposed that the natural decay of trees may have first suggested the employment of hollow trees for canoes, but such trees are not easily removed entire. It is difficult to conceive how so great an advance in the art of shipbuilding was first introduced, but

there can be no doubt that the agent first employed for this purpose was fire.

I have noticed when travelling in Bulgaria that the gipsies and others who roam over that country usually select the foot of a dry tree to light their cooking fire; the dry wood of the tree, combined with the sticks collected at the foot of it, makes a good blaze, and the tree throws forward the heat like a fire-place. Successive parties camping on the same ground, attracted thither by the vicinity of water, use the same fireplaces, and the result is that the trees by degrees become hollowed out for some distance from the foot, the hollow part formed by the fire serving the purpose of a semi-cylindrical chimney. Such a tree, torn up by the roots, or cut off below the part excavated by the fire, would form a very serviceable canoe, the parts not excavated by the fire being sound and hard. The Andaman islanders use a tree in this manner as an oven, the fire being kept constantly burning in the hollow formed by the flames.

One of the best accounts of the process of digging out a canoe by means of fire is that described by Kalm, on the Delaware river, in 1747. He says: "When the Indians intend to fell a tree, for want of proper instruments they employ fire; they set fire to a quantity of wood at the roots of the tree, and in order that the fire might not reach further up than they would have it, they fasten some rags to a pole, dip them in water, and keep continually washing the tree a little above the fire until the lower part is burnt nearly through; it is then pulled down. When they intend to hollow a tree for a canoe, they lay dry branches along the stem of the tree as far as it must be hollowed out, set them on fire, and replace them by others. While these parts are burning, they keep pouring water on those parts that are not to be burnt at the sides and ends. When the interior is sufficiently burnt out, they take their stone hatchets and shells and scoop out the burnt wood. These canoes are usually thirty or forty feet long." In the account of one of the expeditions sent out by Raleigh in 1584 a similar description is given of the process adopted by the Indians of Virginia, except that, instead of sticks, resin is laid on to the parts to be excavated and set fire to; canoes capable of holding twenty persons were formed in this manner.

The Waraus of Guiana employ fire for excavating their canoes; and when Columbus discovered the Island of Guanahane or San Salvador, in the West Indies, he found fire employed for this purpose by the natives, who called their boats "*canoe*," a term which has ever since been employed by Europeans to express this most primitive class of vessel.

Dr. Mouat says that, in Blair's time, the Andaman islanders

Guiana,
West
Indies.

Andaman
Isles.

Birmah.

New
Caledonia.New
Zealand,
Australia.

W. Africa.

Bending
by fire.North-west
America.

excavated their canoes by the agency of fire; but it is not employed for that purpose now, the whole operation being performed by hand. Simes, in 1800, speaks of the Birmese war-boats, which were excavated partly by fire and partly by cutting. Nos. 1276 and 1277 of my collection are models of these boats. In New Caledonia, Turner, in 1845, says that the natives felled their trees by means of a slow fire at the foot, taking three or four days to do it. In excavating a canoe, he says, they kindle a fire over the part to be burnt out, and keep dropping water over the sides and ends, so as to confine the fire to the required spot, the burnt wood being afterwards scraped out with stone tools. The New Zealanders, and probably the Australians also, employ fire for this purpose (*Cook*). The canoes of the Krumen in West Africa are also excavated by means of fire.

A further improvement in the development of the dug-out canoe consists in bending the sides into the required form after it has been dug out. This process of fire-bending has already been described in parts 1 and 2 of my Catalogue, when speaking of the methods employed by the Esquimaux and Australians in straightening their wooden spears and arrow-shafts. The application of this process to canoe-building by the Ahts of the north-west coast of North America is thus described by Mr. Wood in his "Natural History of Man:" "The canoe is carved out of a solid trunk of cedar (*Thuja gigantea*). It is hollowed out, not by fire, but by hand, and by means of an adze formed of a large mussel-shell; the trunk is split lengthwise by wedges. All is done by the eye. When it is roughly hollowed it is filled with water, and red-hot stones put in until it boils. This is continued until the wood is quite soft, and then a number of cross-pieces are driven into the interior, so as to force the canoe into its proper shape, which it ever afterwards retains. While the canoe is still soft and pliant, several slight cross-pieces are inserted, so as to counteract any tendency towards warping. The outside of the vessel is then hardened by fire, so as to enable it to resist the attacks of insects, and also to prevent it cracking when exposed to the sun. The inside is then painted some bright colour, and the outside is usually black and highly polished. This is produced by rubbing it with oil after the fire has done its work. Lastly, a pattern is painted on its bow. There is no keel to the boat. The red pattern of the painting is obtained by a preparation of *annato*. For boring holes the Ahts use a drill formed by a bone of a bird fixed in a wooden handle."

Birmah.

A precisely similar process to this is employed in the formation of the Birmese dug-out canoes, and has thus been described to me by Capt. O'Callaghan, who witnessed the process during

the Birmese war in 1852: "A trunk of a tree of suitable length, though much less in diameter than the intended width of the boat, is cut into the usual form, and hollowed out. It is then filled with water, and fires are lit, a short distance from it, along its sides. The water gradually swells the inside, while the fire contracts the outside, till the width is greatly increased. The effect thus produced is rendered permanent by thwarts being placed so as to prevent the canoe from contracting in width as it dries; the depth of the boat is increased by a plank at each side, reaching as far as the ends of the hollowed part. Canoes generally show traces of the fire and water treatment just described, the inner surface being soft and full of superficial cracks, while the outer is hard and close."

It is probable that this mode of bending canoes has been discovered during the process of cooking, in which red-hot stones are used in many countries to boil the water in vessels of skin or wood, in which the meat is cooked. No. 1256 of my collection is a model of an Aht canoe, painted as here described. No. 1257 is a full-sized canoe from this region, made out of a single trunk; it is not painted, so that the grain of the wood can be seen.

The distribution of the dug-out canoe appears to be almost universal. It is especially used in southern and equatorial regions. Leaving Australia, we find it employed with the outrigger, which will be described hereafter, in many parts of the Polynesian and Asiatic islands, including New Guinea, New Zealand, New Caledonia, and the Sandwich Islands. It was not used by the natives of Tasmania, who employed a float consisting of a bundle of bark and rushes, which will be described in another place. Wilkes speaks of it in Samoa, at Manilla, and the Sooloo Archipelago. De Guignes in 1796 and De Morga in 1609 saw them in the Phillippines, where they are called *pangues*, some carrying from two to three and others from twelve to fifteen persons. They are (or were) also used in the Pelew, Nicobar, and Andaman Isles. In the India Museum there is a model of one from Assam, used as a mail-boat, and called *dák nao*. In Birmah, Simes, in 1800, describes the war-boats of the Irrawaddy as eighty to one hundred feet long, but seldom exceeding eight feet in width, and this only by additions to the sides; carrying fifty to sixty rowers, who use short oars that work on a spindle, and who row instead of paddling. Captain O'Callaghan, however, informs me that they sometimes use paddles (Nos. 1276 and 1277). They are made of one piece of the teak tree. The king had five hundred of these vessels of war. They are easily upset, but the rowers are taught to avoid being struck on the broadside; they draw only three feet of

Distribu-
tion.Polynesian
and Asiatic
Isles.Bay of
Bengal.Southern
Asia.

water. On the Menan, in Siam, Turpin, in 1771, says that the king's *ballons* are made of a single tree; and will contain 150 rowers; the two ends are very much elevated, and the rowers sit cross-legged, by which they lose a great deal of power. The river vessels in Cochin China are also described as being of the same long, narrow kind. At Ferhabad, in Persia, Pietro Delle Valle, in 1614, describes the canoes as being flat-bottomed, hollow trees, carrying ten to twelve persons.

Persia.

Africa.

In Africa, Duarte Barbosa, in 1514, saw the Moors at Zuama make use of boats, *almadias*, hollowed out of a single trunk, to bring clothes and other merchandise from Angos. Livingstone says the canoes of the Bayeye of South Africa are hollow trees, made for use and not for speed. If formed of a crooked stem they become crooked vessels, conforming to the line of the timber. On the Benuwé, at its junction with the Yola, Barth, for the first time in his travels southward, saw what he describes as rude little shells hollowed out of a single tree; they measured twenty-five to thirty feet in length, one to one foot and a half in height, and sixteen inches in width; one of them, he says, was quite crooked. On the White Nile, in Unyoro, Grant says that the largest canoe carried a ton and a half, and was hollowed out of a trunk. On the Kitangule, west of Lake Victoria Nyanza, near Karague, he describes the canoes as being hollowed out of a log of timber fifteen feet long and the breadth of an easy chair. These kind of canoes are also used by the Makoba, east of Lake Ngami, by the Apingi and Camma, and the Krumen of the West African coast, of which last No. 1272 of my collection is a model.

South
America.

In South America the Patagonians use no canoes, but in the northern parts of the continent dug-out canoes are common. One described by Condamine, in 1743, was from forty-two to forty-four feet long, and only three feet wide. They are also used in Guiana, and Professor Wilson says that the dug-out canoe is used throughout the West Indian Archipelago. According to Bartram, who is quoted by Schoolcraft, the large canoes formed out of the trunks of cypress trees, which descended the rivers of Florida, crossed the Gulf, and extended their navigation to the Bahama Isles, and even as far as Cuba, carrying twenty to thirty warriors. Kalm, in 1747, gives some details respecting their construction on the Delaware river, already referred to, and says that the materials chiefly employed in North America are the red juniper, red cedar, white cedar, chestnut, white oak, and tulip tree. Canoes of red and white cedar are the best, because lighter, and they will last as much as twenty years, whereas the white oak barely lasts above six years. In Canada these dug-outs were made of the

West
Indies.North
America.

white fir. The process of construction on the west coast of North America has been already described.

In Europe Pliny mentions the use of canoes hollowed out of a single tree by the Germans. Amongst the ancient Swiss lake-dwellers at Robenhausen, associated with objects of the stone age, a dug-out canoe, or *Eisbaun*, made of a single trunk twelve feet long and two and a half wide, was discovered (Keller, translated by Lee). In Ireland, Sir William Wilde says that amongst the ancient Irish dug-out canoes were of three kinds—one small, trough-shaped, and square at the ends, having a projection at either end to carry it by; the paddlers sat flat at the bottom and paddled, there being no rowlocks to the boat. A second kind was twenty feet in length and two in breadth, flat-bottomed, with round prow and square stern, strengthened by thwarts carved out of the solid and running across the boat, two near the stem and one near the stern. The prow was turned up; one of these was discovered in a bog on the coast of Wexford, twelve feet beneath the surface. The third sort were sharp at both ends, twenty-one feet long, twelve inches broad, and eight inches deep, and flat-bottomed. These canoes are often found in the neighbourhood of the crannoges, or ancient lake habitations of the country, and were used to communicate with the land; also in the beds of the Boyne and Bann. Ware says, that dug-out canoes were used in some of the Irish rivers in his time, and to this day I have seen paddles used on the Blackwater, in the south of Ireland. Professor Wilson says that several dug-out canoes have been found in the ancient river-deposits of the Clyde, and also in the neighbourhood of Falkirk. In one of those discovered in the Clyde deposits, at a depth of twenty-five feet from the surface, a stone, almond-shaped celt was found. Others have been found in the ancient river-deposits of Sussex and elsewhere, in positions which show that the rivers must probably have formed arms of the sea at the time they were sunk.

2. *Vessels in which the planks are stitched to each other.*—All vessels of the dug-out class are necessarily long and narrow, and very liable to upset; the width being limited by the size of the tree, extension can only be given to them by increasing their length. In order to give greater height and width to these boats, planks are sometimes added at the sides and stitched on to the body of the canoe by means of strings or cords, composed frequently of the bark or leaves of the tree of which the body is made. In proportion as these laced-on gunwales were found to answer the purpose of increasing the stability of the vessel, their number was increased; two such planks were added instead of one, and as the joint between the planks was

by this means brought beneath the water-line, means were taken to caulk the seams with leaves, pitch, resin, and other substances. Gradually the number of side planks increased and the solid hull diminished, until, ultimately, it dwindled into a bottom board, or keel, at the bottom of the boat, serving as a centre-piece on which the sides of the vessel were built. Still the vessel was without ribs or framework; ledges on the sides were carved out of the solid substance of each plank, by means of which they were fastened to the ledges of the adjoining plank, and the two contiguous ledges served as ribs to strengthen the boat; finally, a framework of vertical ribs was added to the interior and fastened to the planks by cords. Ultimately the stitching was replaced by wooden pins, and the side planks pinned to each other and to the ribs, and these wooden pins in their turn were supplanted by iron nails.

In different countries we find representations of the canoe in all these several stages of development. Of the first stage, in which side planks were added to the body of the dug-out canoe, to heighten it, the New Zealand canoe, No. 1259 of my collection, is an example. Capt. Cook describes this as solid, the largest containing from thirty men upwards. One measured seventy feet in length, six in width, and four deep. Each of the side pieces was formed of an entire plank, about twelve inches wide, and about an inch and a half thick, laced on to the hollow trunk of the tree by flaxen cords, and united to the plank on the opposite side by thwarts across the boat. These canoes have names given to them like European vessels.

On the Benuwé, in Central Africa, Barth describes a vessel in this same early stage of departure from the original dug-out trunk. It consisted of "two very large trunks joined together with cordage, just like the stitching of a shirt, and without pitching, the holes being merely stuffed with grass. It was not water-tight, but had the advantage," he says, "over the dug-out canoes used on the same river, in not breaking if it came upon a rock, being, to a certain degree, pliable. It was thirty-five feet long, and twenty-six inches wide in the middle." No. 1258 of my collection is a model of one of these. The single plank added to the side of the Birmese dug-out canoe has been already noticed. Although my informant does not tell me that these side planks are sewn on, I have no doubt, judging by analogy, that this either is or was formerly the case.

The Waraus of Guiana are the chief canoe-builders of this part of South America, and to them other tribes resort from considerable distances. Their canoe is hollowed out of a trunk of a tree, and forced into its proper shape partly by means of fire and partly by wedges, upon a similar system to that

New
Zealand.

Africa.

Birmah.

South
America.

described in speaking of the Ahts of North America and the Birmese; the largest have the sides made higher by a narrow plank of soft wood, which is laced upon the gunwale, and the seam caulked. This canoe is alike at both ends, the stem and stern being pointed, curved, and rising out of the water; there is no keel, and it draws but a few inches of water. This appears to be the most advanced stage to which the built-up canoe has arrived on either continent of America, with the exception of Tierra del Fuego, where Commodore Byron, in 1765, saw canoes in the Straits of Magellan made of planks sewn together with thongs of raw hide; these vessels are considerably raised at the bow and stern, and the larger ones are fifteen feet in length by one yard wide. They have also been described by more recent travellers. Under what conditions have these miserable Fuegians been led to the employment of a more complex class of vessel than their more advanced congeners of the north?

In order to trace the further development of the canoe in Africa. this direction, we must return to Africa and the South Seas. On the island of Zanzibar, Barbosa, in 1514, says that the inhabitants of this island, and also Penda and Manfia, who are Arabs, trade with the main land by means of "small vessels very loosely and badly made, without decks, and with a single mast; all their planks are sewn together with cords of reed or matting, and the sails are of palm mats." On the river Yeou, near Lake Tchad, in Central Africa, Denham and Clapperton saw canoes "formed of planks, rudely shaped with a small hatchet, and strongly fastened together by cords passed through holes bored in them, and a wisp of straw between, which the people say effectually keeps out the water; they have high poops like the Grecian boats, and would hold twenty or thirty persons." On the Logon, south-east of Lake Tchad, Barth says the boats are built "in the same manner as those of the Budduma, except that the planks consist of stronger wood, mostly *Birgem*, and generally of larger size, whilst those of the Budduma consist of the frailest material, viz. *Fogo*. In both, the joints of the planks are provided with holes, through which ropes are passed, overlaid with bands of reed tightly fastened upon them by smaller ropes, which are again passed through small holes stuffed with grass." On the Victoria Nyanza, in East Central Africa, Grant speaks of "a canoe of five planks sewn together, and having four cross-bars or seats. The bow and stern are pointed, standing for a yard over the water, with a broad central plank from stem to stern, rounded outside (the vestige of the dug-out trunk), and answering for a keel."

Thus far we have found the planks of the vessels spoken of merely fastened by cords passed through holes in the planks,

and stuffed with grass or some other material, and the accounts speak of their being rarely water-tight. Such a mode of constructing canoes might serve well enough for river navigation, but would be unserviceable for sea craft. Necessity is the mother of invention, and accordingly we must seek for a further development of the system of water-tight stitching amongst those races in a somewhat similar condition of culture which inhabit the islands of the Pacific and the borders of the ocean between it and the continent of Africa.

The majority of those vessels now to be described are furnished with the outrigger; but as the distribution of this contrivance will be traced subsequently, it will not be necessary to describe it in speaking of the stitched plank-work.

Polynesian
Isles.

In the Friendly Isles Captain Cook, in 1773, says "the canoes are built of several pieces sewed together with bandage in so neat a manner that on the outside it is difficult to see the joints. All the fastenings are on the inside, and pass through *kants* or ridges, which are wrought on the edges and ends of the several boards which compose the vessel." At Otaheite he speaks of the same process, and says that the chief parts are formed separately without either saw, plane, or other tool. La Perouse gives an illustration of an outrigger canoe from Easter Island, the sides of which are formed of drift-wood sewn together in this manner. At Wytoohee, one of the Paumotu, or Low Archipelago, Wilkes, in 1838, says that the canoes are formed of strips of coconut tree sewed together. Speaking of those of Samoa, he describes the process more fully: "The planks are fastened together with *sennit*; the pieces are of no regular size or shape. On the inside edge of each plank is a ledge or projection, which serves to attach the sennit, and connect and bind it closely to the adjoining one. It is surprising," he says, "to see the labour bestowed on uniting so many small pieces together, when large and good planks might be obtained. Before the pieces are joined, the gum from the husk of the bread-fruit tree is used to cement them close and prevent leakage. These canoes retain their form much more truly than one would have imagined; I saw few whose original model had been impaired by service. On the outside the pieces are so closely fitted as frequently to require close examination before the seams can be detected. The perfection of workmanship is astonishing to those who see the tools with which it is effected. They consist now of nothing more than a piece of iron tied to a stick, and used as an adze; this, with a gimlet, is all they have, and before they obtained their iron tools, they used adzes made of hard stone and fish-bone." The construction of the Fiji canoe, called *drua*, is described by Williams in great detail. A keel

or bottom board is laid in two or three pieces, carefully scarfed together. From this the sides are built up, without ribs, in a number of pieces varying from three to twenty feet. The edges of these pieces are fastened by ledges, tied together in the manner already described. A white pitch from the bread-fruit tree, prepared with an extract from the cocoa-nut kernel, is spread uniformly on both edges, and a fine strip of *masi* laid between. The binding of sennit with which the boards, or *ranos*, as they are called, are stitched together is made tighter by small wooden wedges inserted between the binding and the wood, in opposite directions. The ribs seen in the interior of these canoes are not used to bring the planks into shape, but are the last things inserted, and are for uniting the deck more firmly with the body of the canoe. The carpenters in Fiji constitute a distinct class, and have chiefs of their own. The Tongan canoes were inferior to those of Fiji in Captain Cook's time, but they have since adopted Fiji patterns. The Tongans are better sailors than the Fijians. Wilkes describes a similar method of building vessels in the King's Mill Islands, but with varieties in the details of construction. "Each canoe has six or eight timbers in its construction; they are well modelled, built in frames, and have much sheer. The boards are cut from the cocoa-nut tree, from a few inches to six or eight feet long, and vary from five to seven inches in width. These are arranged as the planking of a vessel, and very neatly put together, being sewed with sennit. For the purpose of making them water-tight they use a slip of pandanus leaf, inserted as our coopers do in plugging a cask. They have evinced much ingenuity," he says, "in attaching the uprights to the flat timbers." It is difficult, without the aid of drawings, to understand exactly the peculiarities of this variety of construction, but he says they are secured so as to have all the motion of a double joint, which gives them ease, and comparative security in a seaway.

Turning now to the Malay Archipelago, Wallace speaks of a Malay *prahu* which accompanied the vessel in which he sailed from Macassar to New Guinea, a distance of 1,000 miles, and says that it had not a single nail in it. The largest of these, he says, are from Macassar, and the Bugis countries of the Celebes and Boutong. Smaller ones sail from Ternate, Pidore, East Ceram, and Garam. The majority of these^d he says, have stitched planks. No. 1268 of my collection is a model of a vessel employed in those seas. Wallace says that the inhabitants of Ké Island, west of New Guinea, are the best boat-builders in the archipelago, and several villages are constantly employed at the work. The planks here, as in

Asiatic
Isles.

the Polynesian Islands, are all cut out of the solid wood, with a series of projecting ledges on their edges in the inside. But here we find an advance upon the Polynesian system, for the ledges of the planks are pegged to each other with wooden pegs. The planks, however, are still fastened to the ribs by means of *rattans*. The principles of construction are the same as in those of the Polynesian Islands, and the main support of the vessel still consists in the planks and their ledges, the ribs being a subsequent addition; for he says that after the first year the rattan-tied ribs are generally taken out and replaced by new ones, fitted to the planks and nailed, and the vessel then becomes equal to those of the best European workmanship. This constitutes a remarkable example of the persistency with which ancient customs are retained, when we find each vessel systematically constructed, in the first instance, upon the old system, and the improvement introduced in after years. I wonder whether any parallel to this could be found in a British arsenal. The psychological aspect of the proceeding seems not altogether un-English.

Southern
Asia.

Extending our researches northward, we find that Dampier, in 1686, mentions, in the Bashee Islands, the use of vessels in which the planks are fastened with wooden pins. On the Menan, in Siam, Turpin, in 1771, speaks of long, narrow boats, "in the construction of which neither nails nor iron are employed, the parts being fastened together with roots and twigs which withstand the destructive action of the water. They have the precaution," he says, "to insert between the planks a light, porous wood, which swells by being wet, and prevents the water from penetrating into the vessel. When they have not this wood, they rub the chinks by which the water enters with clay." In the India Museum there is a model of a very early form of vessel from Birmah, described as a trading vessel. The bottom is dug out, and the sides formed of planks laced together. A large stone is employed for an anchor. Here we see that an inferior description of craft has survived upon the rivers in the midst of a higher civilisation than that which has produced a superior class of vessel upon the seas.

India.

Turning westward, we have the surf-boat of Madras, called *massoola*, which, on account of its elasticity, is still used on the sea-shore. Its parts are stitched together in the manner represented in the model, No. 1267 of my collection. On the Malabar coast the ships of the Pardesys, who consisted of Arabs, Persians, and others who have settled in the kingdom of Malabar, are described by Barbosa in 1514. "They build ships," he says, "of 200 tons, which have keels like the Portuguese, but have no nails. They sew their planks with neat cords, very well

pitched, and the timber very good. Ten or twelve of these ships, laden with goods, sail every year in February for the Red Sea, some for Aden and some for Jeddah, the port of Mecca, where they sell their merchandise to others, who transmit it to Cairo, and thence to Alexandria. The ships return to Calicut between August and October of the same year." The earliest description we have of these vessels in this part of the world, in historic times, is in the account of the travels of two Mahomedans in the ninth century. In these travels it is related that there were people in the Gulf of Oman "who cross over to the islands that produce cocoa-nuts, taking with them their tools, and make ships out of it. With the bark they make the cordage to sew the planks together, and of the leaves they make sails; and having thus completed the vessel, they load it with cocoa-nuts and set sail." Marco Polo, at the commencement of the fourteenth century, confirms this, and says, speaking of the ships at Ormuz, in the Persian Gulf, "that they do not use nails, but wooden pins, and fasten them with threads made of the Indian nut. These threads endure the force of the water, and are not easily corrupted thereby. These ships have one mast, one sail, and one beam, and are covered with but one deck. They are not caulked with pitch, but with the oil and fat of fishes. When they cross to India they lose many ships, because the sea is very tempestuous, and they are not strengthened with iron." In the Red Sea, Father Lobo, in 1622, describes the vessels called *gelves*, which, he says, are made almost entirely of the cocoa-nut tree. The trunk is sawn into planks, the planks are sewn together with thread which is spun from the bark, and the sails are made of the leaves stitched together. They are more convenient, he says, than other vessels, because they will not split if thrown upon banks or against rocks.

We have now arrived in the region which is usually regarded Egypt. as the cradle of western civilisation, certainly the land in which western culture first began to put forth its strong shoots; and we must expect to find that the art of shipbuilding advanced in the same ratio as other trades. But, unlike the Phœnicians, the Egyptians confined their navigation chiefly to the Nile, and had an abhorrence of Typhon, as they termed the sea, because it swallowed up the great river, which, being the chief source of their prosperity, they regarded as a god.

Here it may be desirable to digress for one moment from the chain of continuity which we have been following, in order to say a few words about the most primitive form of vessel used on the Nile, viz. that mentioned by Isaiah as being of Ethiopian origin, and to which the mother of Moses entrusted her infant progeny—the vessel of bulrushes. What the cocoa-nut tree was

to the navigators on the eastern seas, the papyrus was to the Egyptians, and from it every part of the vessel—rope, planks, masts, and sails—was constructed. Adverting to the earliest and simplest of these papyrus vessels, the common use for a bundle of faggots, for such it was, is not, perhaps, one of those coincidences which, viewed by the light of modern culture, we should select as evidence of connection between distant lands. And yet there are peculiarities of form which make the bulrush float of the Egyptians worthy of comparison with those used in the rivers of Australia.

- Australia. The Australian float, as represented by a model in the British Museum, consisted of a bundle of bark and rushes, pointed and elevated at the ends, and bound round with girdles of the same material. The only vessel, according to Mr. Calder, used in Tasmania, on the west coast, is thus described by him in the "Journal of the Anthropological Institute": "It is of considerable size, something like a whale-boat, that is, pointed at both ends, but a solid structure, and the natives, in their aquatic adventures, sit on the top of it. It was generally made by the buoyant and soft, velvety bark of the swamp tree (*Melaluca* sp.), and consisted of a multitude of small strips bound together."
- California. Professor Wilson says that the Californian canoe consists of a mere rude float, made of rushes, "in the form of a lashed-up hammock." A woodcut in Sir Gardner Wilkinson's "Ancient Egypt," No. 399 of his work, represents three persons making one of these papyrus floats. It is the *baris*, or memphite bark, bound together with papyrus, spoken of by Lucan, and it is of precisely similar form to those above described, elevated and pointed at the ends, and the men are in the act of binding it round with girdles. This is the kind of boat in which Plutarch describes Isis going in search of the body of Osiris through the fenny country; a bark made of papyrus. Pliny attributes the origin of shipbuilding to these vessels—"Naves primum repertas in Egypto in Nilo ex papyro" (Lib. vii. cap. 56)—and speaks of their crossing the sea and visiting the Island of Taprobane (Ceylon, Sir G. Wilkinson); but it seems probable that he must refer to a more advanced form of vessel than the mere bulrush float.

The racial connection between the Australians and the Egyptians, first put forward by Professor Huxley, has hardly met with general acceptance as yet; but, startling as it at first sight appeared, the more we look into the evidence bearing upon it, the less improbable, to say the least, it becomes, when viewed by the light of comparative culture. I have already shown, in another place,* how closely some of the Australian

* 'Lectures on Primitive Warfare,' in the "Journal of the Royal United Service Institution."

weapons correspond to some of those still used on the Upper Nile, and the remarkable resemblance here pointed out in a class of vessels which might well have been used in passing short distances from island to island of the now submerged fragments of land that are supposed to have formerly existed in parts of the southern hemisphere, is, at least, worthy of attention amongst other evidence of the same kind that may be collected, although I fully admit that it is not of a character to stand alone. I will not exceed my province by attempting to defend the theory of the Australioid origin of the Egyptians on physical grounds, preferring to leave the defence of that theory in the hands of its author, who is so well able to support his own views; but I may take this opportunity of commenting on some remarks made by Professor Owen in his valuable paper, published in the last number of our journal, on the psychical evidence of connection between them and the black races of the southern hemisphere. Adverting to the fresco painting, in the British Museum, of the ancient Egyptian fowler, who holds in his hand a stick, which he is in the act of throwing at a flock of birds, I am inclined to agree with Professor Owen in thinking there is nothing in its shape to denote that it is a boomerang. Other figures, however, in Rosellini's "*Egyptian Monuments*," show the resemblance more clearly, and if these are not enough, the specimen of the weapon itself in the glass case in the Egyptian room of the British Museum proves the identity of the weapon beyond possibility of doubt. I have elsewhere stated at length,* that having made several fac-similes of this weapon from careful measurements, so as to obtain the exact size, form, and weight of the original, for the purpose of experiment, I found that it possessed all the properties of the Australian boomerang, rising in the air, and returning in some cases to within a few paces of the position from which it was thrown. In fact, it was easier to obtain the return flight from this weapon than from many varieties of the Australian boomerang, with which I experimented at the same time.

But supposing the ancient Egyptian to be "convicted of the boomerang," says the learned professor, "common sense repudiates the notion of the necessity of inheritance in relation to such operations." Against this I would urge, that the application of the general quality of common sense to the determination of questions of psychical connection between races so far removed from us as the Australians or the predecessors of the earliest Egyptian kings, is inconsistent with all that we know of the phenomena of mental evolution in man, seeing that there

* Address to the Anthropological Department at the Brighton meeting of the British Association, 1872.

must necessarily be many stages of disparity between them and any intelligent member of the Anthropological Institute to whose common sense this appeal was made.

If the common sense of the nineteenth century does not repudiate the fact that the steam engine, the electric telegraph, vaccination, free trade, and a thousand other contrivances for the benefit of our race, have sprung from special centres, and have been inherited, or otherwise received, by the highly cultivated races to which they have spread in modern times, neither would the common sense of the Australian or prehistoric Egyptian, after its kind, bar the likelihood of such contrivances as the boomerang, the parrying shield, or the baris having been handed from one savage people to another in a similar manner. Wherever two or three concurrent chains of connection, whether of race, language, or the arts, can be traced along the same channel, such evidence is admissible, and is indeed frequently the only evidence available in dealing with prehistoric times.

The peculiar, elevated ends of the papyrus floats are almost identical in form, but not in structure, with those now used in parts of India, especially on the Ganges; and the word *junk* is said to be related to *juncus*, a bulrush. Somewhat similar rafts, but flat, turned up in front but not behind, and called *tankwa*, are described by Lieut. Prideaux as being still used on Lake Tsàna, in Soudan, and they are also used by the Shillooks, who make them of a wood as light as cork, called *ambads* (*Anemone mirabilis*). A paper by Mr. John Hogg, in the "Magazine of Natural History" of 1829, to which my attention has been kindly drawn by Mr. John Jeremiah, contains some useful information on the subject of Egyptian papyrus vessels. Denon describes and figures a very primitive kind of float of this sort, consisting of a bundle of straw or stalks, pointed and turned up in front, and says that the inhabitants of the Upper Nile go up and down the river upon it astride, the legs serving for oars; they use also a short double-bladed paddle. It is worthy of notice that the only other localities, that I am aware of, in which this double paddle is used, are the Sooloo Archipelago and among the Esquimaux. Bezzoni also describes the same kind of vessel. Mr. Hogg, in his paper, gives several illustrations of improved forms of these solid papyrus floats, derived from a mosaic pavement discovered in the Temple of Fortune at Praneste. From these it seems that they were bound round with thongs, pointed, and turned up and over at both ends. But Bruce, in 1790, describes more particularly the class of vessel used in Abyssinia in his time, called *tankwa*, or, as he writes it, *tancoa*, and says that it corresponds exactly to the description of Pliny (Pliny, "Nat. Hist.," Lib. xiii. cap. 2). His description appears possibly

to indicate that there was a separate line of development of hollow vessels derived from the flat raft. "A piece of acacia tree was put in the bottom to serve as a keel, to which plants were joined, being first sewed together, then gathered up at the ends and stern, and the ends of the plant tied fast there." (On Lake Tsâna they are only turned up in front: see above.) Bezzoni describes a similar kind of vessel on Lake Mœris, which seems clearly to be hollow. "The outer shell or hulk was composed of rough pieces of wood, scarcely joined, and fastened by four other pieces wrapped together by four more across, which formed the deck; no tar, no pitch, either inside or out, and the only preventive against the water coming in was a kind of weed which had settled in the joints of the wood." The only other locality, that I know of, in which similar vessels to these are used, is Formosa, a description of which is given by Mr. J. Thomson, F.R.G.S. ("The Straits of Malacca, Indo-China, and China," p. 304), for the sight of which I am indebted to Mr. L. Distant. He says: "We went ashore in a catamaran, a sort of raft made of poles of the largest species of bamboo. These poles are bent by fire, so as to impart a hollow shape to the raft, and are lashed together with rattan. There is not a nail used in the whole contrivance."

But the boats "woven of the papyrus," mentioned by Pliny, certainly refer to something more complex than the papyrus bundle above described. Lucan describes them as being sewn with bands of papyrus, and Herodotus describes them more fully. This passage has been variously translated by different authors, but the version given by Sir Gardner Wilkinson is as follows:—"They cut planks measuring about two cubits, and having arranged them like bricks, they build the boat in the following manner: they fasten the planks round firm, long pegs, and, after this, stretch over the surface a series of girths, *but without any ribs*, and the whole is bound *within* by bands of papyrus." The exact meaning of this is obscure; but I would suggest, that as the "fastening within" clearly shows it was not a solid structure, the more reasonable interpretation of it is by supposing that the planks, arranged in brick fashion, were fastened on the inside by cords, in the manner practised in the South Sea Islands and elsewhere. What the long pins were is uncertain; but as Sir Gardner Wilkinson says that the models found in the tombs show that ribs were used at a time probably subsequent to this, these pins may have been rudimentary ribs of some kind, and they also may have been "bound within," to the planks in the same manner. It seems not unlikely that these boats may have also been bound round on the outside to give them additional strength, after the manner of the papyrus

floats above described.* With this vessel, which was called *baris*, they used a sort of anchor, consisting of a stone with a hole in it, similar to one on a Burmese vessel, of which a model is in the India Museum.

The larger class of Egyptian vessels were of superior build, the planks being fastened with wooden pins and nails, and their construction somewhat similar to those still used on the Nile.

Area of
Western
Civilisation

Returning now to the link of the chain to which we have appended this digression, and carrying our inquiries further northward into the area of western civilisation, it is to be expected that we should lose all trace of this primitive mode of ship-building. The earliest vessels recorded in classical history were fastened with nails. In Homer's description of the vessel built by Odysseus, both nails and ribs were employed, and it had a round or a flat bottom (*Smith's Dic.*). No trace of any earlier form of ship has been discovered in Europe, until we come to the neighbourhood of the North Sea. Here, in the

Boat of the
Nydam
Moss.

Nydam Moss, in Slesvic, in 1863, was discovered a large boat, seventy-seven feet long, ten feet ten inches broad in the middle, flat at the bottom, but higher and sharper at both ends, having a prow at both ends, like those described by Tacitus as having been built by the Suiones, who inhabited this country and Sweden in ancient times. This vessel, from its associated remains, has been attributed to the third century. The bottom consisted of a broad plank, about two feet broad in the middle, but diminishing in width towards each end. A small keel, eight inches broad and one deep, was carved on the under side of the plank, which corresponds to the bottom plank, which, in Africa and the Polynesian Islands, we have shown to be the vestige of the dug-out trunk. On to this bottom plank, five side planks, running the whole length of the vessel, were built, but they differed from those previously described in overlapping, being clinker-built, and attached to each other, not by strings or wooden pins, but by large iron bolts. The planks, however, resembled those of the southern hemisphere, in having clamps or ledges carved out of the solid on the inside; these ledges were perforated, and their position corresponded to rows of vertical ribs, to which, like the vessels at Ké Island, and elsewhere in the Pacific, they were *tied* by means of cords passing through corresponding holes in the ribs. Each rib was carved out of one piece, and, like those of Ké Island, in the Asiatic Archipelago, could easily have been taken out and replaced by

* Since writing this I have seen the illustration in Sir H. Rawlinson's note to this passage, in which he gives it as his opinion that this is the meaning and use to be ascribed to these pins; and he says that this system is still employed in Egypt, where they raise an extra bulwark above the gunwale. Rawlinson's "Herodotus," vol. ii. p. 132.

others after the vessel was completed. In short, the vessel represented the particular stage of development which may be described as plank-nailed and rib-tied, or which might be characterised as having removable ribs, differing in this respect from the more advanced system of modern times, in which the ribs, together with the keel, form a framework to which the planks are afterwards bent and fastened.

This mode of fastening the ribs to ledges carved out of the planking, Mr. Engelhardt, to whom we are indebted for the accurate drawings and description of this vessel,* remarks "is a most surprising fact, considering that the people who constructed the boat are proved by the associated remains to have been not only familiar with the use of iron, but to have been able to produce damascened sword-blades." But this fact, which, taken by itself, has been justly described as surprising, analogy leads us to account for by supposing these particular parts of the vessel to have been survivals from a universally prevalent primitive mode of fastening, the nearest southern representative of which, at the present time, is to be found in the Red Sea and adjoining oceans. Nor can there be any reason to doubt, I think, that this mode of constructing vessels may have been used in the intervening countries, which have been the scene of the rise of Western civilisation, since the earliest times, but which have now lost all trace of the most primitive phases of the art of ship-building.

Mr. Engelhardt, however, traces a connection between this ancient vessel, found in the Nydam Moss, and the Northland boats now used on the coast of Norway and the Shetland Isles, the peculiar rowlocks of which, and also the clincher-nails by which the sides are fastened, correspond very closely to those of the Nydam boat. Here also, and in Finland and Lapland, we find survivals of a still earlier mode of ship-building, corresponding to the more primitive plank-stitched vessels, before described, in so many places in the southern hemisphere. Regnard, in 1681, describes the Finland boats as being twelve feet long and three broad. "They are made of fir, and fastened together with the sinew of the reindeer; this makes them," he says, "so light that one man can carry one on his shoulders; others are fastened together with thread made of hemp, rubbed with glue, and their cords are of birch bark or the root of the fir." Outhier, in 1736, confirms this account of the manner in which they are sewn together, and says that it renders them very flexible, and suitable for passing cataracts, on account of their lightness, and because they do not break when they are cast against a rock. The Lapland sledge, called

* "Denmark in the Early Iron Age," by Conrad Engelhardt. 1836.

pulea is also described by Regnard as being of the same construction—boat-shaped, and the parts sewn together with the sinew of the reindeer, without a single nail. I have not as yet been able to trace this mode of fastening vessels continuously in Russia; but Bell, in 1719, says that the long, flat-bottomed barks used on the Volga for carrying salt have not a single iron nail in their whole fabric; and Atkinson describes vessels on the Tchoussowaia which are built without nails, but these are fastened with wooden pins.

Bark
Canoes.
Australia.

3. *Bark Canoes.*—The use of bark for canoes might have been suggested by the hollowed trunk; but, on the other hand, we find this material employed in Australia, where the hollowed trunk is not in general use. Bark is employed for a variety of purposes, such as clothing, materials for huts, and so forth. Some of the Australian shields are constructed of the bark of trees. The simplest form of canoe in Australia consists, as already mentioned, of a mere bundle of reeds and bark pointed at the ends. It is possible that the use of large pieces of bark in this manner may have suggested the employment of the bark alone. Belzoni (p. 62) mentions crossing to the island of Elephantine, on the Nile, in a ferry-boat which was made of branches of palm trees fastened together with cords, and covered on the outside with a mat pitched all over. The solid papyrus boats represented on the pavement at Præneste, before mentioned, have evidently some other substance on the outside of them; and Bruce imagines that the junks of the Red Sea were of papyrus, covered with leather.* The outer covering would prevent the water from soaking into the bundle of sticks, and thus rendering it less buoyant. Bark, if used in the same manner, would serve a like purpose, and thus suggest its use for canoe-building. Otherwise I am unable to conceive any way in which bark canoes can have originated, except by imitation of the dug-out canoe.

For crossing rivers, the Australian savage simply goes to the nearest stringy-bark tree, chops a circle round the tree at the foot, and another seven or eight feet higher, makes a longitudinal cut on each side, and strips off bark enough by this means to make two canoes. If he is only going to cross the river by himself, he simply ties the bark together at the ends, paddles across, and abandons the piece of bark on the other side, knowing that he can easily provide another. If it is to carry another besides himself, he stops up the tied ends with clay; but if it is to be permanently employed, he sews up the ends more carefully, and keeps it in shape by cross-pieces,

* 'On Vessels of Papyrus,' by John Hogg, Esq., M.A., F.L.S. "Magazine of Nat. Hist.," vol. ii. 1829.

thereby producing a vessel which closely resembles the bark canoe of North America ("Nat. Hist. of Man," Wood). I have not been able to trace the use of the bark canoe further north than Australia on this side of the world, probably owing to its being ill adapted for sea navigation; nor do I find representatives of it in any part of Europe or Africa, although bark is extensively used in the Polynesian Islands and elsewhere for other purposes.

It is the two continents of America which must be regarded as the home of the bark canoe.

The Fuegian canoe has been described by Wilkes, Pritchard, and others. It is sewn with shreds of whalebone, sealskin, and twigs, and supported by a number of stretchers lashed to the gunwale; the joints are stopped with rushes, and, without, smeared with resin. In Guiana the canoe is made of the bark of the purple-heart tree, stripped off and tied together at the ends. The ends are stopped with clay, as with the Australians. This mode of caulking is not very effectual, however, and the water is sure to come in sooner or later.

The nature of the material does not admit of much variety in the construction; suffice it to say that it is in general use in North America, up to the Esquimaux frontier. Its value in these regions consists in the facility with which it is taken out of the water and carried over the numerous rapids that prevail in the North American rivers. The Algonquins were famous for the construction of them. Some carry only two people, but the *canot de maître* was thirty-six feet in length, and required fourteen paddlers. Kalm, in 1747, gives a detailed account of the construction of them on the Hudson river, and Lahontan, in 1684, gives an equally detailed description of those used in Canada. The bark is peeled off the tree by means of hot water. They are very fragile, and every day some hole in the bottom has to be stopped with gum.

Mr. T. G. B. Lloyd, in an excellent paper descriptive of the Beothucs of Newfoundland, published in the last number of the Journal, has described the remarkable bark canoe of these people. Its form is different from any other canoe of this or any other region that I have heard of, the line of the gunwale rising in the middle, as well as at the ends, and the vessel being V-shaped in section, with a straight wooden keel at the bottom. Its form is so singular, that the only idea of continuity which I can set up for it is, that it must have been copied from some European child's paper boat, capable, by a single additional fold, of being converted into a cocked hat; the central pyramidal portion of the paper boat having given the form to the pyramidal sides of the Beothuc vessel. If this be rejected, then

its history has yet to be told, for no native tribe ever employed such a peculiar form unless by inheritance.

Nos. 1248 and 1249 of my collection are South American bark canoes; Nos. 1250 to 1252 are bark canoes from North America.

4. *Canoes of wicker and skin.*—As we approach the Arctic regions, the dug-out and bark canoes are replaced by canoes of skin and wicker. As we have already seen, in the case of the bow, and other arts of savages, vegetable materials supply the wants of man in southern and equatorial regions, whilst animal materials supply their place in the north.

The origin of skin coverings has been already suggested when speaking of bark canoes. The accidental dropping of a skin bottle into the water might suggest the use of such vessels as a means of recovering the harpoon, which, as I have already shown elsewhere, was almost universally used for fishing in the earliest stages of culture. The Esquimaux lives with the harpoon and its attached bladder almost continually by his side. The Esquimaux *kayak*, Nos. 1253 and 1254 of my collection, in which he traverses the ocean, although admirable in its workmanship, and, like all the works of the Esquimaux, ingenious in construction, is in principle nothing more than a large, pointed bladder, similar to that which is lashed to the harpoon at its side; the man in this case occupying the opening which, in the bladder, is filled by the wooden pin that serves for a cork.

This is, I believe, a very primitive form of vessel, although there can be no doubt that many links in the history of its development have been lost. Unlike the dug-out canoe, such a fragile contrivance as the wicker canoe perishes quickly, and no direct evidence of its ancestry can be traced at the present time. It is only by means of survivals that we can build up the past history of its development; and these are, for the most part, wanting.

The skin of an animal, flayed off the body with but one incision, served, as I have elsewhere shown, a variety of purposes: from it the bellows was derived, the bagpipes, water-vessels, and pouches of various kinds; and, filled with air, it served the purpose of a float. Steinitz, in his "History of the Ship," gives an illustration of an inflated ox skin, which in India is used to cross rivers, the owner riding upon the back of the animal and paddling with his hands, as if it had been a living ox.

In the Assyrian sculptures there are numerous illustrations representing men floating upon skins of this kind, which they clasp with the left hand, like the tree trunks, already mentioned,

Wicker
Skin
Canoes.

Esqui-
maux.

Inflated
Skins.

India.

Assyria.

that are used by the American Indians, and swim with the right. Layard says this manner of crossing rivers is still practised in Mesopotamia. He also describes the raft, composed of a number of such floats, made of the skins of sheep flayed off with as few incisions as possible; a square framework of poplar beams is placed over a number of these and tied together with osier and other twigs. The mouths of the sheep-skins are placed upwards, so that they can be opened and refilled by the raft-men. On these rafts the merchandise is floated down the river to Baghdad; the materials are then disposed of and the skins packed on mules, to return for another voyage. On the Nile similar rafts are used, the skins being supplanted by earthen pots, which, like the skins on the Euphrates, serve only a temporary purpose, and after the voyage down the river are disposed of in the bazars. Mesopotamia.
Egypt.

This mode of floating upon skins I should conjecture to be of northern origin, and to be practised chiefly by nomadic races; but we find it employed on the Morbeya, in Morocco, by the Moors, who no doubt had it from the East. It is thus described by Lempriere, in 1789. A raft is formed of eight sheep-skins filled with air, and tied together with small cords; a few slender poles are laid over them, to which they are fastened, and that is the only means used at Buluane to convey travellers, with their baggage, over the river. As soon as the raft is loaded, a man strips, jumps into the water, and swims with one hand, whilst he pulls the raft after him with the other; another swims and pushes behind. This reminds us of the custom of the Gran Chaco Indians of South America, who, in crossing rivers, use a square boat or tub of bull's hide, called *pelota*. It is attached by a rope to a horse's tail, which swims in front, or the rope is taken in the mouth of an expert swimmer. Morocco.
South America.

I have not traced the distribution of these rafts of inflated skins as continuously as, I have no doubt, they might be traced amongst nomadic and pastoral races, moving with their flocks and herds, the skins of which would be employed in this way; nor have I been able to trace the connection which, I have no doubt, existed between the inflated skin and the open curragh of wicker covered with skins. Where one is found, the other is often found with it. Herodotus describes the boats used by the people who came down the river to Babylon, and says they are constructed in Armenia, and in the parts above Assyria, thereby connecting them with the north. "The ribs of these vessels," he says, "are formed of willow boughs and branches, and covered externally with skin. They are round, like a shield, there being no distinction between head and stern. They line the bottom with reeds and straw, and taking on board merchandise, chiefly Skin and Wicker Boats.
Euphrates.
Herodotus.

palm wine, float down the stream. The boats have two oars, one to each man: one pulls and the other pushes. They are of different dimensions, some having a single ass on board and others several. On their arrival at Babylon the boatmen dispose of their goods, and offer for sale the ribs and straw; *they then load the asses with the skins* and return with them to Armenia, where they construct new boats"—just as is now done with the inflated skins of the rafts at Baghdad.

Baghdad.

Sassanian
Sculptures.

Nimroud.

Baghdad.

India.

Esqui-
maux.Prince
William
Sound.Aleutian
Isles.

In the Pictorial Bible an illustration is given from the Sassanian sculptures at Takht-i-Bostan of several of these round vessels, probably of wicker, covered with skins. In one of these the principal figure carries a composite bow, which, as I have elsewhere shown, is of northern origin. Mr. Layard discovered in Nimroud a sculpture in which one of these boats is represented. It is round, like those described by Herodotus; back and stern alike; carrying two people, one of whom pulls and the other pushes; and in the same sculpture are represented men swimming on the inflated sheep-skins. He says that these same round vessels are still used at Baghdad, built of boughs and timber covered with skins, over which bitumen is smeared to render it more water-tight. Hamilton also speaks of the same vessels at Baghdad, at the commencement of the eighteenth century.

On the Cavery, in Mysore, Buchanan, in 1800, describes ferry-boats that are called *lonies*, which are circular baskets covered with leather; but whether these vessels, like the composite bow used in the same region, can be traced to a northern origin I have not the means of determining, nor have I as yet sufficient materials to enable me to ascertain whether such vessels are employed in the north of Asia at the present time. What the inflated skin is to these circular vessels, the *kayak* is to the *baidar* of the Esquimaux. Throughout the whole region occupied by this race, these two kinds of vessels are used, differing only in minute varieties of detail in the different localities. According to Dr. King, whose valuable paper, "On the Industrial Arts of the Esquimaux," was published in the first volume of the "Journal of the Ethnological Society," the varieties of the *kayak* in the different localities consists merely in the elevation and shape of the rim of the hole in which the man sits. In Prince William Sound, on the N.W. coast, the *kayak* is frequently built with two or three holes to contain two or three men. The bow has two beaks, one of which turns up, according to Captain Cook, like the head of a violin, as represented in No. 1254 of my collection. This is also used in the Aleutian Isles. The meaning of this double beak I have not been able to ascertain. The *baidar* used on this coast has

also a double beak, as represented in No. 1255 of my collection.

In the British Museum there is a *kayak* with a single opening, from Behring Straits, which differs but little from another in the same museum from Greenland; the *kayak* of Greenland has a knob of ivory at each end to protect the sharp point. The *baidar* is used at Ochotsk and Kamtschatka, on the Asiatic coast, and all along the northern coast of America, eastward from Behring Strait. Models of both *baidar* and *kayak* are in the British Museum, from Kotzebue Sound. In Frobisher Strait, Frobisher, in 1577, says the boats are of two kinds of leather stretched on frames, the greater sort open, and carrying sixteen or twenty people (the *baidar*), and the lesser, to carry one man, covered over, except in one place where the man sits (the *kayak*). In Hudson's Straits and Greenland, where the larger vessels are called *ooniak*, they are flat-sided and flat-bottomed, about three feet high, and nearly square at the bow and stern, whereas this sort on the north-west coast is sometimes pointed at bow and stern. Kerguelen, in 1767, mentions both kinds in Greenland; and Kalm, in 1747, speaks of both, though not from personal observation, on the coast of Labrador. The Esquimaux canoe has been known to have drifted from Greenland across the north of Scotland, and has been picked up, with the man still alive in it, on the coast of Aberdeen (Wilson).

In Britain the *coracle* of osier, covered with skin, is mentioned by Cæsar, and in Britain, Gaul, and Italy by Lucan (A.D. 39-65). In Scotland, Bellenden, in the sixteenth century, speaks of the *curvock* of wands, covered with bulls' hide, as being in use in the sixteenth century, and its representative is still used in the west of Ireland. Sir William Wilde says that, under the name of *curragh*, it is still made of leather, stretched over a wooden frame, on the Boyne, and in Aran, on the west coast, of light timber, covered with painted canvas, which has superseded the use of leather. I have seen these vessels at Dingle, on the south-west coast, where they go by the name of *veeöy*; they are there twenty-three feet in length by four in width, and one foot nine inches deep, made of laths, and covered with painted canvas: they are used, from Valentia, along the west coast as far as Galway. In the south they are larger than in the north, where they are called *curraghs*, and a single man can carry one on his back, as the ancient Briton did his *coracle*. Their continuance is caused by their cheapness, costing only six pounds when new. Here also they were, until recently, constructed of leather. They have a small triangular sail, and, like the most ancient

forms of vessels, they are guided, when sailing, by means of oars, one on each side.

Rafts. 5. *Rafts*.—The trunks of trees, united by mutual attraction, as they floated down the stream, would suggest the idea of a raft. Rafts made of layers of reeds are used by the women of Australia, from which they dive to obtain mussel-shells. In New Guinea the catamaran, or small raft, formed of three planks lashed together with rattan, is the commonest vessel used. Others are larger, containing ten or twelve persons, and consist of three logs lashed together in five places, the centre log being the longest, and projecting at both ends.

Australia.
New Guinea.
Madras.
Ganges.
Manilla.
Peru.

This is exactly like the catamaran used on the coast of Madras, a model of one of which is in the India Museum; they are also used on the Ganges, and in the Asiatic isles. At Manilla they are known by the name of *saraboas*; but the perfection of raft navigation is on the coast of Peru. Ulloa, in 1735, describes the *balzas* used on the Guayaquil, in Ecuador, and on the coast as far south as Paita. They are called by the Indians of the Guayaquil *jangadas*, and by the Darien Indians *puero*. They are made of a wood so light that a boy can easily carry a log a foot in diameter and three or four yards long. They are always made of an odd number of beams, like the New Guinea and Indian rafts, the longest and thickest in the centre, and the others lashed on each side. Some are seventy feet in length and twenty broad. When sailing, they are guided by a system of planks, called *guaras*, which are shoved down between the beams in different parts of the raft as they are wanted, the breadth of the plank being in the direction of the lines of the timbers. By means of these they are able to sail near the wind, and to luff up, bear away, and tack at pleasure. When a *guara* is put down in the fore part of the raft, it luffs up, and when in the hinder part, it bears away. This system of steering, he says, the Indians have learnt empirically, "their uncultivated minds never having examined into the *rationale* of the thing."

It was one of these vessels which Bartolomew Ruiz, pilot of the second expedition for the discovery of Peru, met with, and which so astonished the sailors, who had never before seen any vessel on the coast of America provided with a sail. Condamine speaks of the rafts in 1743, on the Chinchipe, in Peru. They are also used on the coast of Brazil, where they are also called *jungadas*, from which locality there is a model of one in the British Museum, and another in the Christy collection. Professor Wilson thinks it was by means of these vessels, driven off the coast of America westward, that the Polynesian and Malay islands were peopled; and this brings us to the consideration of

Brazil.

the peculiar class of vessel which is distributed over a continuous area in the Pacific and adjoining seas, viz. the outrigger canoe, which, I shall endeavour to show, was derived from the raft.

The sailing properties of the *balza*, or any other similar raft, must have been greatly impeded by the resistance offered to the water by the ends of its numerous beams. In order to diminish the resistance, the obvious remedy was to use only two beams, placed parallel to each other at a distance apart, with a platform, laid on cross-poles, between them.

Outrigger
Canoe.

Pacific
Ocean.

Double
Log Raft.

Of this kind we find a vessel used by the Tasmanians, and described by Mr. Bonwick, on the authority of Lieut. Jeffreys. The natives, he says, would select two good stems of trees and place them parallel to each other, but a couple of yards apart; cross-pieces of small size were laid on these, and secured to the trees by scraps of tough bark. A stronger cross timber, of greater thickness, was laid across the centre, and the whole was then covered with wicker-work. Such a float would be thirty feet long, and would hold from six to ten persons (H. Spencer, "Descriptive Sociology").

Tasmania

In Fiji, Williams describes a kind of vessel called *ulatoka*, a raised platform floating on two logs, which must evidently be a vessel of the same description as that used in Tasmania.

Fiji.

From these two logs were derived the double canoe on the one hand, and the canoe with the outrigger on the other.

Origin.

A link between the catamaran and the outrigger canoe is seen, in a model in the India Museum, from Madras. It consists of the usual catamaran, already described, of three beams lashed together, the longest being in the centre, across which are attached, their ends extending on one side, long outrigger poles, to the extremities of which, parallel, and at some distance from the catamaran, is fastened an outrigger log, of smaller size and length, pointed at both ends, and boat-shaped, exactly like those used with the outrigger canoes to be hereafter described. When the art of hollowing out canoes was introduced, then one canoe and one log, or two canoes, were employed, as the case might be. This I consider to be a more natural sequence than to suppose the outrigger invented as a means of steadying the dug-out canoe.

Link.

Madras.

Develop-
ment.

The outrigger canoe, and its accompanying double canoe, is used over the whole of the Polynesian and Asiatic islands—from Easter Island on the east, to Ceylon and the Andamans on the west. Their varieties are also, in some cases, continuous; and I will endeavour to trace the distribution of each, commencing with the canoe with the single outrigger.

Distribu-
tion.

Single
Outrigger

Towards the eastern and northern extremities of the Poly-

nesian Islands we find that the canoes have a single outrigger, and that the ends of the outrigger poles are attached directly to the outrigger log, instead of being connected with it by upright supports, as is the case elsewhere. As the outrigger is on a lower level than the line of the gunwales of the canoe, across which the other ends of the outrigger poles are lashed, they are generally curved downwards to meet the outrigger.

This is the form described by La Perouse in Easter Island. It is the same in the drawings of canoes from Marquesas, also in the one, figured by Wilkes, from Wytoohee or Disappointment Isle, in the Low Archipelago; and in the one from Tahiti, Society Isles; also in those of the Sandwich Isles and the King's Mill Isles; and it reappears again on the extreme west of the group in Ceylon, No. 1265.

But whilst this peculiarity appears to be constant in the above-mentioned region, the form of the body of the canoe differs in each group of islands. In the Marquesas the bow turns up very much, in the Sandwich Islands only slightly (No. 1264); in Disappointment Isle there is a projecting part before and behind, by which they step into it; in Tahiti they have a similar projection over the stern only, which is used for a similar purpose.

To the westward of these, in a group extending over the centre of the region in question, all the outriggers that I have seen described, either by means of models or drawings, have upright supports on the upper side, and on these the outrigger poles rest, so as to be on the level of the line of the gunwales. This is the case in Nuie or Savage Island, in Samoa (No. 1262), the Caroline Isles, in Bowditch Island, one of the Union group, in Tonga and Fiji, in New Guinea, in the Louisade Archipelago, and in North Australia.

Another peculiarity in this central region deserves notice. The ends of the canoe are covered with a deck extending over about one-third of its length fore and aft, and on this deck there is a row of upright pegs, carved out of the same piece as the deck, and running down the centre of it. Each peg is surmounted by a white *Cypræa ovula* shell tied on. The origin and meaning of this custom is unknown, but it was probably adopted originally as insignia of the rank of the owner. Its distribution is limited to a group of islands lying between about the 10th and 20th parallel of south latitude, and 170° and 180° west longitude. Cook, in 1773, speaks of it in the Friendly Isles; and Wilkes, in 1838, mentions it in Samoa, Fiji, and Bowditch Isle. The canoes of the Solomon Isles and other islands are, however, also ornamented with shells in different parts.

Poles
attached
directly to
Outrigger.

Distribu-
tion.

Variation
of Hull.

Outrigger
attached by
Uprights.

Distribu-
tion.

Cypræa
ovula
shells.

Br
istribu-
on.

The canoe with the single outrigger is also used in Garret ^{Single} Dennis Island, which is described by Dampier, in 1686; in the ^{Outrigger.} Ladrones, by Pigafetta, 1519; in the Pelew Islands, in Borneo, in Ceylon, in the Nicobar and Andaman Islands.

In King's Mill and the Caroline Islands, to the north, the outrigger is somewhat smaller than elsewhere, its length not exceeding one-third of the length of the canoe. In the adjoining groups of the King's Mill and Ladrone Islands we have a variety of this vessel in which the canoe, on the outrigger side, is nearly flat, having a belly only on the opposite side. ^{Flat Sides.} This is described by Wilkes in 1838, and Dampier in 1686.

The double canoe represents a variety in which both logs of the double-logged raft have developed into canoes. The two ^{Double} canoes are placed side by side, at a little distance apart, and transverse spars lashed across the gunwales of both, a platform being built upon the cross spars (No. 1266). ^{Canoe.}

Double canoes of this kind were used in New Zealand formerly, also in New Caledonia. Mr. Baines mentions it in North ^{Distribu-} Australia, but I am not aware that it is used in New Guinea. Cook speaks of it in the Friendly Isles, Wilkes in Fiji. It was formerly used in Samoa, but Wilkes says it has been discontinued, and the single outrigger only is now used; in Tahiti; in the Low Archipelago, the inhabitants of which group are very expert sailors, steering by the stars, and seldom making any material error; in the Sandwich Isles; also in Ceylon, where it is called a *paddy boat*; in Birmah and in some of the Indian rivers; at Mosapore, where it goes by the name of *langardy*; and in Cochin, on the southern portion of the Malabar coast, where it is employed as a ferry-boat. It also appears, by a model in the India Museum, that it is used as high up as Patna, on the Ganges.

In Fiji we find a connecting link between the double canoe ^{Link.} and the canoe with the single outrigger. Here the outrigger consists of a boat, similar in construction to the large one to which it is attached, but smaller, and connected with the platform between them by upright supports.

Contrivances for sailing near the wind with the single outrigger canoe have led to the introduction of several other ^{Sailing pe-} varieties of this class of vessel. It is necessary that the ^{culiarities.} outrigger should always be on the windward side. The outrigger acts as a weight on the windward side, to prevent the narrow canoe from being blown over on the opposite side. When it blows very hard, the men run out on to the outrigger, to give it the additional weight of their bodies. Wilkes says that whenever the outrigger gets to the leeward side, there is almost

Sailing
Fore and
Aft.

invariably an upset. The outrigger probably is pressed too deeply into the water, and meeting with too much resistance, breaks the poles. To meet this difficulty both the canoe and outrigger are, in some parts, made pointed at both ends. When they wish to tack, instead of luffing and coming about, they bear away, until the vessel gets on the opposite quarter, and then, by shifting the sail, they sail away again stern first. This system is pursued in Fiji, in parts of New Guinea, and northward, in King's Mill Islands (Wilkes).

Distribu-
tion.

Double
Outrigger.

Another mode of meeting this difficulty consists in having two outriggers, one on each side. This is employed in the Louisiade Archipelago (No. 1260), in parts of New Guinea, and to the north, in the Sooloo Archipelago. Yet another method remains to be described. In Samoa the canoes are built with bow and stern, and the outrigger is pointed towards the fore part only. As these vessels can only sail one way, the outrigger, in tacking, must necessarily be sometimes on the lee-ward side; to meet this, they rig out a platform corresponding to the outrigger platform on the opposite side: this, for distinction's sake, we may term a *weather platform*. It has no outrigger log, nor does it touch the water, but when the wind blows so heavily as to press the outrigger down on the lee side, they run out on the weather platform, and counterbalance the effect of the wind by their weight. This contrivance is used in some parts of New Guinea, where, it may be observed, the varieties of the outrigger canoe are more numerous than in most of the other islands. It is also used in Solomon Isles, where the weather platform is of the same width as the outrigger platform, and probably in some of the other islands to the north.

Distribu-
tion.

Weather
Platform.

Distribu-
tion.

Double
Weather
Platform.

Finally we have, in the Asiatic Archipelago, a contrivance which may be said to be derived partly from the double outrigger, and partly from the weather platform last described. In proportion as the simple dug-out canoe began to be converted into a built-up vessel, and to acquire greater beam, they began to depend less and less on the support of the outrigger. The double outrigger necessarily presented considerable resistance to the water, but the vessel was still too narrow to sail by itself. A weather platform had, however, been found sufficient to balance the vessel on one side, and the next step was to knock off the outrigger log on the other side, thereby converting the outrigger platform into a weather platform, the two platforms projecting one on each side of the vessel, on the level of the gunwales, without touching the water, and thereby acting on the principle of the balancing-pole of a tight-rope dancer, whilst the resistance to the water was by this means confined to that

of the hull of the vessel itself. These double weather platform boats were also found more convenient in inland waters, in the canals in Manilla, and elsewhere.

De Guines, in 1796, mentions a contrivance of this sort in the Philippines, but from the account, it is not quite clear whether he refers to a double weather platform, or a vessel with an outrigger and a weather platform. He says: "The boats at Manilla are very sharply built, and furnished with yards, which serve as *balances*, on the windward side of which, when the wind blows hard, the sailors place themselves to counterpoise the effect of the wind on the sails. This contrivance does not, however, always ensure safety, for at times the bamboos which form the balance break, in which case the boat founders and the crew are lost." Dampier, however, in 1686, clearly speaks of the double weather platform at Manilla. He says: "The difference between these Manilla boats and those at Guam, in the Ladrões, is that, whereas at Guam there is a little boat, fastened to the outriggers, that lies in the water, the beams or bamboos here are fastened transverse-wise to the outlayers on each side, and touch not the water like boats, but one, three, or four feet above the water, and serve for the canoe-men to sit and row and paddle upon." He says, that "when the vessel reels, the ends of the platform dip into the water, and the vessel rights itself." Still further north, at Rangoon, on the Irrawaddy, we find the same contrivance described by Simes, in 1800. He says: "The boats are long and narrow, sixty feet in length, and not more than twelve in the widest place; they require a good deal of ballast, and would have been in constant danger of upsetting had they not been provided with outriggers which, composed of thin boards, or oftener of buoyant bamboos, make a platform that extends horizontally six or seven feet on the outside of the boat from stem to stern. Thus secure," he says, "the vessel can incline no further than until the platform touches the surface of the water, when she immediately rights; on this stage the boatmen ply their oars."

Distribu-
tion.

Manilla.

Birmah.

This constitutes one out of many points of evidence that might be mentioned, serving to show that the arts and culture of the Birmese, and of all this part of Asia, have been derived from the Malay Archipelago more probably than the reverse.

Results.

The outrigger canoe itself has never, I believe, been known on the Irrawaddy within the memory of man, but, as already seen, it is used in the Nicobar and Andaman Isles and on the coast to the south.

These outriggers, or balancing platforms, appear gradually to have diminished in size as the vessel increased in beam, and there can be little doubt that the rude stages or balconies out-

side the gunwales represented in the models of many of the larger vessels used in these seas are the last vestiges of the outrigger. No. 1278 is an example of this.

Results.

All the various items of evidence which I have collected, and endeavoured to elucidate by means of survivals, whether in relation to modes of navigation or other branches of industry, appear to me to tend towards establishing a gradual development of culture as we advance northward. Although Buddhism and its concomitant civilisation may have come from the north, there has been an earlier and prehistoric flow of culture in the opposite direction—northward—from the primæval and now submerged cradle of the human family in the southern hemisphere. This, I venture to think, will establish itself more and more clearly, in proportion as we divest ourselves of the numerous errors which have arisen from our acceptance of the Noachian deluge as a universal catastrophe.

Ocean Highway.

As human culture developed northward from the equator toward the 40th parallel of latitude, civilisation began to bud out in Egypt, India, and China, and a great highway of nations was established by means of ships along the southern margin of the land, from China to the Red Sea.

Distribution of other Ship Forms.

Oculus.

Along this ocean highway may be traced many connections in ship forms which have survived from the earliest times. The *oculus*, which, on the sacred boats of the Egyptians, represented the eye of Osiris guiding the mummy of the departed across the sacred lake, is still seen eastward—in India and China—converted into an ornamental device, whilst westward it lived through the period of the Roman and Græcian *biremes* and *triremes*, and has survived to this day on the Maltese rowing-boats and the *xebecque* of Calabria, or has been converted into a hawser-hole in modern European craft. The function of the rudder—which in the primitive vessels of the southern world is still performed by the paddlers, whilst paddling with their faces to the prow—as sails began to be introduced, was confided to the rearmost oars. In some of the Egyptian sculptures the three hindermost rowers on each side are seen steering the vessel with their oars. Ultimately one greatly developed oar on each side of the stern performed this duty, the *loom* of which was attached to an upright beam on the deck, as is still the case in some parts of India. In some of the larger Malay *prahaws* there are openings or windows in the stern, considerably below the deck, by which the steersmen have access to two large rudders, one on each side, each rudder being the vestige of a side oar.

Rudder.

Throughout the Polynesian Islands the steering is performed with either one or two greatly developed paddles.

Both in the rudder of the Egyptian sculptures and the *gubernaculum* of the Roman vessels, we see the transition from the large double oar, one on each side, to the single oar at the stern. The ship of Ptolemaeus Philopator had four rudders, each thirty cubits in length (Smith's *Dic.*). The Chinese and Japanese rudder is but a modification of the oar, worked through large holes in the stern of the vessel, which large holes, in the case of the Japanese, owe their preservation to the orders of the Tycoon, who caused them to be retained in all his vessels, in order to prevent his subjects from venturing far to sea. The *buccina*, or shell trumpet, which is used especially on board all canoes in the Pacific, from the coast of Peru to Ceylon, is represented, together with the *gubernaculum*, in the hands of Tritons in Roman sculptures (Smith's *Dic.*, *Navis*), and the shell form of which was preserved in its metallic representatives. Buccina.

The sail, in its simplest form, consists of a triangular mat, Sail. with bamboos lashed to the two longer sides. In New Guinea and some of the other islands, this sail, which is here seen in its simplest form, is simply put up on deck, with the apex downwards and the broad end up, and kept up by stays fore and aft. When a separate mast was introduced this sail was hauled up by a halyard attached to one of the bamboos, at the distance of about one-fifth of its length from the broad end, the apex of the bamboo-edged mat being fastened forward by means of a tack. By taking away the lower bamboo the sail became the *lateen* sail of the Malay pirate *prau*, the singular resemblance of which to that of the Maltese galley of the eighteenth century, a resemblance shared by all other parts of the two vessels, may be seen by two models placed side by side in the Royal United Service Institution. Professor Wilson observes that the use of the sail appears to be almost unknown on either continent of America, and the surprise of the Spaniards on first seeing one used on board a Peruvian *balza* arose from this known peculiarity of early American navigation. Lahontan, however, in 1684, says that the Canadian bark canoes, though usually propelled by paddles, sometimes carried a small sail. He does not, however, say whether the knowledge of these has been derived from Europeans. Mr. Lloyd also mentions small sails used with bark canoes in Newfoundland.

The *crow's nest*, which in the Egyptian vessels served to contain a slinger or an archer at the top of the mast, and which is also represented in the Assyrian sculptures, was still used for the same purpose in Europe in the fifteenth century, was modified in the sixteenth century, and became the mast-head so well known to midshipmen in our own time. The two raised platforms, which in the Egyptian vessels served to contain the man Crow's Nest.

Prora and
Puppis.

Aplustre.

Argument
and conclu-
sion.

with the fathoming pole in the fore part, and the steersman behind, became the *prora* and the *puppis* of the Romans, and the *forecastle* and *poop* of modern European vessels. The *aplustre*, which, in the form of a lotus, ornamented the stern of the Egyptian war craft, gave the form to the aplustre of the Greeks and Romans, and may still be seen on the stern of the Birmese war-boats at the present time.

All these numerous examples serve to show that where civilisation has advanced the forms have been gradually changed ; where, on the other hand, it has not advanced, they have remained unchanged. Sir Gardner Wilkinson and others have pointed out the striking resemblance between the boats of the ancient Egyptians and those of modern India. "The form of the stern, the principle and construction of the rudder, the cabins, the square sail, the copper eye on each side of the head, the line of small squares at the side, like false windows, and the shape of the oars of boats used on the Ganges, forcibly call to mind," he says, "those of the Nile, represented in the paintings of the Theban tombs." We have also seen that the inflated sheep-skin still serves to transport the Mesopotamian peasant across the Euphrates, as it did when Nimroud was a thriving city. The skin and wicker, tub-shaped vessels still float down the Euphrates with their cargoes to Baghdad, are broken up, and the skins carried up the river again on mules, as they were in the time of Herodotus, upwards of 2,000 years ago. What is there to prevent our believing that the primitive vessels which we have been describing in the southern hemisphere, the representatives of some of which have been discovered in river deposits of the stone age in Europe, may have been in use in the countries in which they are now found as long and longer—far longer?

What reason is there to doubt that the rude bark-float of the Australian, the Tasmanian, and the Ethiopian ; the catamaran of the Papuan ; the dug-out of the New Zealander ; the built-up canoe of the Samoan ; and the improved ribbed vessel of the Ké islander, are survivals representing successive stages in the development of the art of ship-building, not lapses to ruder methods of construction, as the result of degradation ; that each stage supplies us with examples of what was at one time the perfection of the art inconceivable ages ago ? Some, as we have seen, especially the more primitive kinds, spread nearly all over the world, whilst others had a more limited area of distribution. Taken together, they enable us to trace back the history of ship-building from the time of the earliest Egyptian sculptures to the commencement of the art.

Nor does the interest of this inquiry confine itself to the

development of ship-building. As affecting the means of locomotion, it throws light on the development of other branches of culture in early times. For even if we set aside exceptional instances in which individual canoes have been driven away to great distances—such as the case in which an Esquimaux in his kayak was picked up off the coast of Aberdeen, or that of a Chinese junk having been wrecked on the north-west coast of America, which might or might not have produced permanent results—and confine ourselves to those cases in which the distribution of like forms of vessels proves that there must probably have been frequent communication between shore and shore; and if we further assume, as I propose to do, that the existing means of communication in the Pacific in a great measure represents the amount of intercourse that took place across the sea in prehistoric times, that is to say, in times prior to the earliest Egyptian sculptures, we find no difficulty in accounting, by this means, for the striking similarity observable in the arts and ideas of savages in distant lands; for not only have these vessels been the means of conveying from place to place the material form of implements, such as celts, stone knives, and so forth, which, being imperishable, have been handed down to us unchanged, and the forms of which we know to have spread over large geographic areas, but also each voyage has conveyed a boat-load of ideas, of which no material record remains, in the shape of myths, religions, and superstitions, which have been emptied out upon the sea-shore, to seek affinity with other chatter that was indigenous to the place.

Thus, by means of intercommunication, no less than by spontaneous development, have been formed those numerous combinations which so greatly puzzle the student of culture at the present time.

DISCUSSION.

Professor T. McK. HUGHES, after mentioning several early historical notices of long voyages made by Phœnicians, Greeks, and others, pointed out that the more advanced form of boat, in which long voyages could be made, would be most widely known: whilst the ruder forms, determined by the requirements and capabilities of different localities, would probably be local. The coracle, for instance, had held its own in Wales from the time of the Romans, from the facility with which it can be made, carried from pool to pool, and used in netting.

Mr. T. G. B. LLOYD described a skin canoe which he had had built by the Indians during a trip across the Island of Newfoundland in the fall of the present year. A framework of green spruce and "var" (Balsam fir), bound together with spruce roots, formed the inside of the canoe, around which three shaved skins of the Caribou

deer were tightly stretched. The skins were sewn together with sinews taken from the back of a deer. When finished, the canoe was about seventeen feet long and four feet wide amidships, and in shape resembled a "flat" or American "dory," rather than a birch-bark canoe. It was found capable of carrying a load of about 600 or 700 pounds, and proved a serviceable craft for running rapids and navigating the lakes of the interior of the island. The employment of such is confined in Newfoundland to the Micmac Indians, who, during their hunting and furring expeditions, construct them at the waterside, use them during the season, and when done with, remove the skins, which they make use of, if in a sufficiently good state of preservation, for the manufacture of mocassins and babiche for snow-shoes.

Mr. PARK HARRISON said that Colonel Lane Fox had shown conclusively how the outrigger arose, and also clearly defined the area where it was used. It did not, however, appear to him to be equally certain that the improvements in boat-building in the Indian Archipelago had been developed without foreign influence. There was a great mixture of races in the islands, owing, probably, to early commerce. Amongst others, the Arabs, it is known, reached Sumatra and Java several hundred years ago. Vessels formed of planks sewn together with sennit may consequently have been introduced by them, and also into Ceylon and the coasts of India, where they are still found side by side with the canoes and rafts of non-seagoing people. A curious story is related by an Arab writer of the ninth century, that a wreck had been found some time previously at the entrance of the Mediterranean Sea, near the Pillars of Hercules, which, from its construction, led to the conclusion that it must have circumnavigated Africa. A certain amount of Phœnician influence might also have to be taken into account, if, as the written characters in Sumatra seem to indicate, some of that race arrived there.

Mr. BLACKMORE and the PRESIDENT also spoke on the paper.

Colonel A. LANE FOX, in reply to some remarks by the President, said that he had considered the possibility of the outrigger having been invented for the purpose of preventing the long, narrow, dug-out canoe from upsetting. That was undoubtedly its object. But viewed as an invention, he thought it was too great a step for savages, and contrary to all analogy of savage progress to suppose that it was introduced suddenly. It was a very clumsy contrivance, and one that would hardly have suggested itself had not their ideas been led up to it by contrivances previously in use. Such a sequence of ideas he found to exist in the varieties of the catamaran or raft, as he had already shown. Nearly all over the world savages used the long, narrow, dug-out canoe, specially liable to upset whenever it was employed; and yet the outrigger was unknown in either continent of America, in Europe, Asia, or Africa. It was confined to the area specified, which was limited by Ceylon on the west and Easter Island on the east. Nor was this all. Within this area there were varieties, and the distribution of these

varieties was also continuous. There could be nothing, he thought, in the nature of the trees used which could necessitate the direct attachment of the outrigger to the outrigger poles on the extreme east and west of this area, whilst in the central region it was attached to them by means of upright supports. So also the variety with one flat side; the custom of using a large shell attached to upright pegs upon the deck; the variety with the double outrigger; the weather platform, the double weather platform without outrigger logs—all these have continuous areas of distribution, which could not have been influenced exclusively by the nature of the materials employed, though, of course, no variety could prevail in places where the materials were unsuitable. Besides which, the several varieties showed a connected sequence of ideas which had spread over the region in question, and this, he thought, was sufficient to prove absolutely that a connection of idea had existed. With respect to what had been said about the importance of weighing carefully the dates of the several contrivances referred to in the paper, the question of date was precisely the problem to be solved. We had few, if any, direct data to go upon. We knew that little or no change had taken place between the time of Cook and the time of Wilkes, but this gave us a very short base to work upon. Analogy only served to point out the direction in which evidence had to be looked for. The nature of survivals and root-indicating branches, thanks to the writings of Mr. Tylor and others, was now beginning to be understood. We knew that on the Euphrates the same tub-shaped, wicker, and skin vessels are now used as they were 2,000 years ago, and the forms of Egypt have survived in India. His argument was that the forms of these savage vessels may have survived from a still earlier period. But until geologists give us some clue to the antiquity of man in the southern hemisphere, and the state of his arts, we can have no *direct* evidence as to the sequence of the forms.

A communication from Mr. L. Adam respecting the Congrès International des Américanistes was read, and the meeting then separated.

JANUARY 12TH, 1875.

Professor BUSK, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were confirmed.

The following presents were announced, and the thanks of the meeting were voted to the donors thereof:—

FOR THE LIBRARY.

From the REV. JAMES GRAVES.—*Journal of the Royal Historical and Archæological Association of Ireland.* No. 19, July, 1874.

From the EDITOR.—*Revue Scientifique*. Nos. 26, 27, and 28, 1874-5.

From the EDITOR.—*Cosmos*, di Guido Cora. Vol. II. Nos. 4 and 5.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIII. No. 156.

From the EDITOR.—*Nature* (to date).

From the SOCIETY.—*Journal of the Asiatic Society of Bengal*. Part II. No. 2; Proceedings, ditto, No. 8, 1874.

From the AUTHOR.—Statistics by Inter-comparison, with Remarks on the Law of Frequency of Error. By Francis Galton.

From HYDE CLARKE, Esq.—Primer of the Haussa Language; by the Rev. J. F. Schon. Haussa Vocabulary. Geography in the Zulu.

The following paper was read by the author :—

ANTHROPOLOGY of PREHISTORIC PERU. By THOMAS J. HUTCHINSON, F.R.G.S., F.S.A., M.A.I., late Her Majesty's Consul for Callao. [With Plates xxviii., xxix., and xxx.*]

DURING many of my rambles amongst Peruvian ruins, whether of burial mounds, fortresses, or old cities, I found myself frequently cogitating on the idea of Mr. Baldwin,† that “the aboriginal South Americans were the oldest people on this continent.” It was impossible for me not to agree in such an opinion. And further contemplation of the architecture which we see along the seaboard of Peru inclines me to another item of his faith, namely, that “the civilised life of the ancient Mexicans and Central Americans may have had its original beginning somewhere in South America (most probably in Peru), as they seem more closely related to the ancient South Americans than to the wild Indians north of the Mexican border.” The term “New World,” applied to America, as opposed to “Old World” (meaning Europe, Asia, and Africa), I believe to be somewhat of a misnomer. As Professor Wilson observes‡: “How old are some of these things of the New World is as yet but very partially appreciated, even by some who seek to antedate the birth of the red man before the first Adam was placed in his eastern garden, or ‘there went up a mist from the earth and watered the whole face of the ground.’”

But the anthropology of Peru in prehistoric times is still

* The blocks for these illustrations, from the author's work, entitled “Two Years in Peru,” have been kindly lent by the publishers, Messrs. Sampson Low, & Co.

† “Ancient America.”

‡ “Prehistoric Man” (vol. i. p. 31), by Daniel Wilson, LL.D. Macmillan & Co., 1862.

very problematical. I may premise that I have already mentioned in my last work of "Two Years in Peru," how little reliable information can as yet be gained as to the arts and knowledge of these early Peruvians. From Polo de Ondegardo, A.D. 1550, and the Inca Garcillaso de la Vega, A.D. 1609, down to Mariano Felipe Paz Soldan in 1868, they all harp on the same string; of which the burden is, that about seven centuries ago (or when William the Conqueror came to England) the first Inca, Manco Capac, and the woman, Mama Oellee, were created by the Sun—nursed in Lake Titicaca, the cradle of the Incas—and founded a new dynasty in Peru. Let us believe the Incas ever were powerful—great makers of roads, or constructors of grand aqueducts (both of which, I may add, *en parenthèse*, were, to my belief, fashioned before ever there was an Inca in the land)—or anything that Spanish chroniclers of the Munchausen type wish to describe them, it appears very evident they were not a race that ever could have held permanent sway in Peru. From the first Inca, Manco Capac, to the last, Atahualpa, their marital relations were all with their own sisters; and it is, therefore, no wonder that, being presumedly in their physical decadence, they were ignominiously thrashed by the Spaniards under Pizarro. These last-mentioned brave soldiers (we are told by the Secretary of the conqueror) knocked them off, in the butchery of Caxamarca, at the rate of four men and a fraction every minute! for Señor Xeres wants us to believe that 160 Spaniards killed 20,000 of the Inca soldiers in half an hour!

By the memoir of the lineage of the Incas, according to Polo de Ondegardo,* it appears there were mercenary soldiers in the old times, as well as in the modern; for we have records of the period when the Cañas and Canches tribes were paid by the Incas to go to war with their neighbours—to be, in fact, hired combatants—"not as vassals following their lords." Polo seems somewhat dogmatic in laying down too many things (in his own words) "to be taken for granted," and speaking of incidents that *must* be understood, without any assignable reason but the simple *dictum*. The records of the Incas do not go farther back, however, than from three hundred and fifty to four hundred years from the first coming of the Spaniards with Pizarro. The softness of the Quichua language may be appreciated when we are told that the name for the god of the Incas, which they used in their prayers, was Pachayachachic Atiesi Uiracocha. One of the authors in the work mentioned in the

* "Rites and Laws of the Incas" (published by the Hakluyt Society in 1873), p. 152.

foot-note is named Juan de Santa Cruz Pachacuti Yamqui Salcamayhua. So that I almost feel myself with the

“———— Verbum Græcum
Spermagoraio-Lekithola-Kanopolides.
Words that should only be used on holidays,
When one has nothing else to do.”

That the temple erected at Cuzco by the Incas (worshippers of the sun, and reputed destroyers of false gods) was ever done so by these people, appears to me contradicted by the fact that its walls represented serpents carved in relief upon the stones. Besides this, we find in the Huarochiri fables—fables they must be, truly—accounts of red lions; of deer eating the people—the first carnivora in the deer tribe of which I ever heard; llamas and foxes engaged in discussions; llamas of blue, red, yellow, and other colours. But these may be taken “for granted” by the following explanation of the author:—

“It is certain that there were no inhabitants in this land until many days and years after the deluge, for it was necessary that the descendants of those who were saved in the Ark should spread themselves to the New World, and it is certain that they cannot have handed down these fables to their sons. It follows that the Devil, who has been so great a Lord over these people, made them believe in lies, and in the matter of the deluge told them about the Llama that spoke, the Fox that wetted its tail, and the other stories. If any Indian would object that, if there was no *yunca** in Parracaca, how is it that there are remains and ruins of farms and cultivation? I reply that, God permitting, the Devil could easily make those Terraces to deceive those who, leaving the natural light of God, served him.”

You will, therefore, not be surprised at the *Athenæum*,† in its critique of this work, speaking of these as “sickly legends,” and as “proofs of the infinite depth of imbecility and vileness to which it is possible for human nature to descend.” Moreover, the account of the false gods of Huarochiri, by Dr. Francisco de Axila, is not only nasty and clumsy, but so full of indecencies that I would be sorry to put it in the hands of any lady reader, or of any member of the Anthropological Institute.

John of the Holy Cross—Salcamayhua, to abbreviate his name—writes his memoir with a genealogical history of his ancestry prefixed, and with all the bitterness of a rabid convert from the ceremonies of heathenism. No doubt when he wrote he was struggling out of the bonds of these ancient holders of Peru, namely, “the Demons and Devils”; but as an account of

* The term *yunca* (Quichua word) means “heat,” and was applied to the sandy and sunburnt coast district, where, nevertheless, the crops were said “to sprout, grow, and ripen in five (5) days after being sown”!!!

† Vide *Athenæum*, 22nd November, 1873.

the antiquities of the country, his book is simply a delusion. He gives the mawkish legend intermingled with words, almost unpronounceable, about the glorious apostle, St. Thomas, of whom we are told*—"Some years after the devils called *Hapiñuñus Achacallas* had been driven out of the land, there arrived in these kingdoms of *Itahuantin-suyu*† a bearded man, of middle height, with long hair, and in a rather long shirt. They say that he was somewhat past his prime, for he already had grey hairs, and he was lean. He travelled with his staff, teaching the natives with much love, and calling them all his sons and daughters. As he went through all the land he performed many miracles; the sick were healed by his touch. He spoke all languages better than the natives. They called him *Tonapa*, or *Tarapaca*—*Tarapaca* means an eagle—*Uiracocharapacha yachipachan*, or *Pachaccan*; this means the servant, and *Uicchaycamayoc* means a preacher, and *bicchaycamayoc cunacuycamayoc*. Although he preached, the people did not listen, for they thought little of him. He was called *Tonapa Uiracocha nipacachan*; but "was he not the glorious apostle St. Thomas?"

Besides this, Mr. Holy Cross makes mention of not a few nasty things, and of a battle at which one of the Incas, named Tupac Ranchiri, who was a priest of the Ceuricancha, set some stones in a row, and fastened shields and clubs to them, so that they might seem at a distance like rows of soldiers sitting down. The prince, looking out for succour from his father, Uira-cocha Yupanqui Inca, saw these rows from a distance, and cried out to the supposed soldiers to rise, as his men were on the point of yielding. The Chancas continued the attack with great fury, and then the prince saw that the stones had become men, who rose up and fought so as that the prince gained the victory. In one part of the memoir, to cross a river‡ we are informed that "some audacious monkeys belonging to a chief of the Manares went over and secured ropes and cables, after overcoming great difficulties." One may wonder if Mr. Darwin ever heard of this corroboration of his theories. The remainder of the paper is taken up with episodes of cannibalism, of the devil, the Incas, giants, and sacrifices; of a cock crowing when Atahualpa was in prison, and of even the birds knowing his name. It appears to me little short of sacrilege to have such a narrative ending with "May God be praised for ever and ever," and I cannot help feeling, with the *Athenæum*, that "the funds of the Hakluyt Society would be

* Op. cit., pp. 70, 71.

† The four provinces in one—the empire.

‡ Op. cit., p. 102.

much better employed in publishing something tending to the solution of the question whether the Americans of Peru and the central provinces came from India or from Egypt, or from both countries."

By information of this latter kind we may be able to get clearer glimpses of the anthropology of prehistoric Peru. The only positive facts that up to the present time we know about the ancient Peruvians, consist in what are being revealed to us every day by the result of excavations in their burial grounds, and by examination of the mathematical forms of their ancient buildings. These show in Peru, to a very great extent, the same as Mr. Stephens observed of the ruins of Palenque, in Central America, namely, "the remains of a cultivated, polished, and peculiar people, who had passed through all the stages incident to the rise and fall of nations, reached their golden age, and perished entirely unknown."

One of the most puzzling things connected with a study of the anthropology of the prehistoric Peruvians is the fact that on islands in the Pacific, such as Easter Island, 2,000 miles from Peru, on the Philippine Islands, on the Ladrões, the Marshall and Gilbert group, the Society Islands, the Navigators', and Marquesas, even in the Sandwich Islands, not long ago visited by Mr. Clemens—the well-known Mark Twain—are observed rock carvings, images, and the ruins of stone buildings somewhat similar in structure, and equally large in dimensions, to those found on the continent in Peru. In fact, the islands mentioned extend over 10,000 miles of ocean. What still adds to this difficulty is the assumption that the early people who made these things had no mechanical tools to aid them in the operations. Because the Mexicans had no iron at the time of the Spanish conquest they are put down as savages. Yet they had abundance of that volcanic glass called obsidian, the chips from which are as sharp as razors. The Peruvians, too, had copper implements, of which I have already exhibited some specimens, taken from graves at Talambo and Pomalca. These are now amongst Colonel Lane Fox's collection in the museum at Bethnal Green. If these colossal works of the old palaces at Tiahuanaco, near Lake Titicaca, and of the stone buildings scattered throughout the Andes, were erected without the machinistic help of such physical aids as to-day render comparatively easy the movements of large bodies, the greater credit is due to the workers of this wonderful architecture. The enormous masses of stone that were settled together without any intervening adhesive of mortar could scarcely have been moved to the apparently inaccessible heights, where they are sometimes discovered, without some important power of locomotion. Because we have

not yet ascertained what it was, is no reason that it should not have existed.

Without going into the philology of either the Aymara or Quichua tongues—the former of which is advocated by Mr. Forbes, and the latter by Mr. Markham, as being the most general idiom of Peruvian antiquity—I here venture upon a supposition. I do so only because I believe all students in the science of languages, that are known to have never been written, can effect little more arrangement than guess, or form grammatical rules out of their own heads. My supposition is that the present city of Calláo, the chief port of Peru, where I resided as Her Majesty's Consul for two years, derives its name from the Collao district of Lake Titicaca, mentioned by Mr. Markham, or that the latter is derived from the former. What can the difference of two vowels—*a* and *o*—be when we see that the last Inca, Atahualpa, is styled Atabaliba by the conqueror's secretary, Xeres, and Atabaliva by his brother Hernando, and we are asked to believe that Parcama means Pacha-Camác !*

Much of the gasconading of Spanish narrative may be thus accounted for:†—"The wonder of the Spanish conquerors at their gems and gold, the ready credulity of the missionary priests in *their anxiety to magnify the gorgeous paganism* which they had overthrown, and the patriotic exaggeration of later chroniclers of native descent,‡ have all tended to overdraw the picture of the "beneficent, civilised despotism of the Incas of Peru." No doubt of it. And this historical muddle was made more obscure by all writers following in the tracks of Garcillaso de la Vega. So that even the eloquent author of the "Conquests of Mexico and Peru," Prescott, studied only amongst said medley in the library at Madrid; for he never was in either Mexico or Peru. And whilst giving to the world the glowing pages of a truly gifted writer, he helped not only to engraft those romantic fictions on the minds of his readers, but tended to sacrifice all the honour and glory due to the prehistoric inhabitants of Peru to the elevation of the Incas, who must have been a degenerate race even in their "gorgeous paganism."

Of such architecture as we have in the colossal burial mounds, no doubt Professor Wilson writes, referring to the massive

* "Reports of the Discovery of Peru," translated and edited, with notes and Introduction. London: printed for the Hakluyt Society, 1872.

† Wilson's "Prehistoric Man," vol. i. p. 295.

‡ This, no doubt, refers to the descriptions of that historian of wonderful memory, the Inca Garcillaso de la Vega, who came to Spain from Peru in A.D. 1550, and whose Royal Commentaries were licensed by the Spanish Inquisition in 1604, or nearly fifty years afterwards, and first published at Lisbon in 1609. The question seems to me an important one, how much of these Quixotic relations about the Incas were idealised and fabricated within the walls of the National Library of Madrid? To which I can only reply, *quien sabe?*

solidity of Peruvian masonry, when he says: * “It is the unconscious aim at the expression of abstract power which attests its triumphs in such barbaric evidence of difficulties overcome; and although it fails even to strive after the beautiful, it not unfrequently impresses us with a sense of sublimity in the very embodiment of that power by which it was achieved. In this respect the most ancient architectural remains of the southern continent have a higher value than those of Mexico, Central America, or Yucatan, for they reveal to us the only true, primitive, self-originating architecture of the New World, and therefore suggest a possible centre from whence that intellectual impulse went forth, pervading with its elevating and refining influences the nations who were first discovered by the European adventurers of the sixteenth century on the mainland of America. Although at that date the distinct centres of Mexican and Peruvian arts were in operation, wholly independent of each other, and had moved in opposite directions, unconscious of the rivalry thus carried on in the development of a native civilisation for the nations of the western hemisphere.” I may add my belief that Mexican, as well as Peruvian, art and manhood were very far down the ladder of decline at the time of the Spanish invasions just indicated.

In spite of Professor Wilson having come to the conclusion that the natural form of the elongated (dolichocephalic) skull “never owes any of its peculiarities to artificial compression,” we might infer that, as the distorting process is known to be carried on even to the present day, such a practice may lead to congenital malformation. Señor Raimondi, one of the most eminent scientists in Peru, and a man of very extensive travel, as well as observation, saw a child in the process by which this is effected only a very few years ago, during his explorations amongst the tribes in the province of Loreto. This was being put through operation by a mother of the Conibos people; and Señor Raimondi saw the child in the bandaging, as it was brought to the mission at Surayaco to be baptised.†

I have already observed that Peruvian anthropology of the prehistoric period is, up to the present time, little more than conjectural. Whence did the early Peruvians come? That they immigrated from China, by way of Behring’s Straits, is advocated by De Guignes, Paraney, and Señor Newman de Monaco. This theory is likewise upheld by Señor Mariano

* Op. cit. vol. ii. p. 94.

† In my work, “Two Years in Peru,” is an illustration of such a flattened head, found in the Campas territory, at a height of 12,000 feet above the level of the sea.

Edward Rivero; admitted as possible by Señor Mariano Felipe Paz Soldan; and even suggested as probable by the illustrious Baron Von Humboldt. But if it be granted, we have before us the fact that the native Peruvian and the native Chinaman of to-day have not one single point of resemblance, either in physical or mental qualities. Not even the slightest *nimbus* of such an origin seems to me recognisable in any of the twenty-six different species of hybridity mentioned by Dr. Tschudi as to be found in Peru. And these are becoming so stretched out to the *ne plus ultra* of what is miscalled half-caste, that amongst the plebeian population—indiscriminately termed *Cholos*—there is no visible mark or sign by which it can be determined to what segment of the human family, anthropologically speaking, they belong. Of this accredited Chinese origin Professor Wilson writes doubtfully, but supposes that* “many slight indications combine to suggest the hypothesis of a peopling of South America from Asia through the islands of the Pacific.” In the same page the Professor starts another idea, that from one of the early centres of South American population planted on the Pacific coast by Polynesian or other migration, and nursed in the neighbouring valley of the Andes in remote prehistoric times, the predominant southern race diffused itself or extended its influence through many ramifications. Then he goes on to say it spread (meaning, of course, the predominant southern race) to the north, beyond the Isthmus of Panama, throughout Central America, and after occupying for a time the Mexican plateau, it overflowed along either side of the great mountain chain, reaching towards the northern latitudes of the Pacific, and extending inland to the east of the Rocky Mountains, through the great valley watered by the Mississippi and its tributaries.

Unless I am to believe in the axiom of Talleyrand, that “words were given to us to disguise our thoughts,” I cannot help understanding that the foregoing tells me of a predominant race making this migration and these ramifications. But in the very succeeding sentence we are told—“It must not, however, be supposed that such a hypothesis of migration implies the literal diffusion of a single people from one geographical centre.” This is but a splitting of words; because, if it be the same race, they must come from one common anthropological, if not geographical, centre. “I should no more think of designating either the Toltecs, or the mound builders, Peruvians,” he continues, “than of calling the Iranian-Indo German-Greeks.” In this the Professor is evidently coming prematurely to a foregone conclusion; for that the ancient Peruvians were mound

* Op. cit., vol. ii. p. 437.

builders we have evidence in the fact of the whole Peruvian coast, to a stretch of nearly fifteen hundred miles along the Pacific, being thickly covered with such mounds as I have diagrams of in my possession (Plate xxix. fig. 1). The most wonderful part of this latter-mentioned incident is the fact of the resemblance which the mounds excavated in the valley of the Mississippi bear to those we find in Peru.* Amongst the former we are told of "a mound one thousand feet in circumference and seventy feet high. Another is two thousand feet round the base and ninety feet high—a truncated pyramid with a flat top of several acres." Why, these are but small mud-heaps compared to the mounds I have had measured at Pacha-Camác and between Lima and Callao. The top of the mound at Pacha-Camác, all of artificial formation, at a height of 200 feet from the base, has a plateau summit, comprising a space of ten acres square; whilst the mounds of Pando and Ocharan far surpass any of those described by Mr. Squier as found in the valley of the Mississippi. That of Pando (Pl. xxix. fig. 1) is 108 feet high, measures 276 to 278 yards from one end of top to the other, in eight gradations of declivity, and 95 to 96 yards across, whilst it is calculated to contain a mass of 14,641,820 cubic feet of material. The wonder at these measurements will be increased when I add that a great portion of it is made up of such sun-dried bricks as I have previously shown to the members here, and that each of these measures only 6 inches long, 4 inches wide, and $2\frac{1}{2}$ inches thick.† More marvellous is it still, that many of these have marks of human fingers on them. The question of tools of art in erecting such a building as this is a secondary consideration. The grand idea is the amount of labour required to pile up such a building. Truly Mr. Mott observes:‡ "The notion that the mere patience of savages, whose time is of no value, may account for the production of works of this kind cannot be entertained. Time is necessarily of value where large numbers of men work together, and only large numbers could accomplish what is found to have been done."

Of the Mississippi mounds we are further told by Squier, in his "*Smithsonian Contributions*": "Many of the inclosures are in the form of circles and squares, and in many cases these figures are mathematically exact, notwithstanding their great size. In one of these exact squares, each side is a thousand and eighty feet long, and the area inclosed twenty-seven acres. In one of

* "*Smithsonian Contributions*."

† Specimens of these can be seen at the Bethnal Green Museum.

‡ "On the Origin of Savage Life." Opening Address for session beginning October 6th, 1873, by Albert J. Mott, President of Liverpool Literary and Philosophical Society.

the exact circles the diameter is seventeen hundred feet, the area forty acres. The precision of these figures has been ascertained by mathematical survey. The ellipse, also exact, is found in other cases.

“One work has the remains of more than two miles of stone wall, containing nearly a million cubic feet of stone. In another there are three million cubic feet of earthwork.”

Totidem verbis! At the mound of Juliana, or Ocharan, near Chorillos, tracked for me, as were the others, by Mr. Steer, of Michigan University, we find an enormous mass. It was ascertained to have an elevation of 95 feet, an average width of 155 feet, and a total length of 1,284 feet, or 428 yards. Like that at Pando, it had graduations of declivity from one end to the other. But the most wonderful thing was its being enclosed by a double wall, now in ruins, which measured 2,448 feet, or 816 yards on two sides, and beyond 2,100 feet, or more than 700 yards, at the other transverses. These enclose a square of 571,200 yards, or about 117 acres.

Of the exactitude in measurements done by the Mississippi mound builders, we are told—“That they understood the general principles of geometry and engineering is proved by the exactness of their work.” It can be seen by any one who reads my book, “Two Years in Peru,” already mentioned, that the measurements of the Peruvian mounds which I have examined all converge to multiples of twelve. This may be an indication of their early acquaintance with the zodiac; and from them the Incas might have derived their astronomical knowledge. A very palpable difference exists between the mounds in the Ohio and Mississippi valleys and those in Peru. Professor Wilson* says:—“So far as has hitherto been observed, the sepulchral mound is generally the memorial of a single interment, though the frequent occurrence of groups of four, five, or six mounds, where a central one of from twenty to thirty feet high is surrounded by others varying from four to ten feet in height, suggests a probable relation between the whole group.” In Peru the burial mounds are on a gigantic scale; these structures contain some thousands of bodies, and each body having its separate resting-place in the general community.

There are few features of the ancient civilisation in Peru so perceptible, even to the casual observer, as the marvellous attention to details with which they buried their dead. The bodies were generally placed in the same position as they are known to exist during the progress of uterine life (Plate xxviii.). They were carefully wrapped and swathed with cotton flock and cloth; the men having bags of coca leaf for their journey to the next

* Vol. i. p. 361.

world, either on the head or slung round the body. Men, women, and children had frequently a bit of copper between the teeth, like the obolus which the pagan Romans used to place in the mouth to pay ferry to the boatman Charon for passage across the Styx. Besides these the men had slings and pottery-ware, as well as agricultural implements, buried with them; whilst the women always were furnished with needles, thread, cloth, combs, and other accessories of housewifery. I found in burial grounds on the northern coast of Peru, near Lambayeque, articles of dyed woollen thread-work, ceramic ware, cloth, needles, and so forth, exactly similar to what had been taken from graves of the same model away down south, at a distance of a thousand miles, by Mr. J. H. Blake, of Boston. The variety of structure in the graves is likewise very remarkable. In one place, Paràrà, up the Oroya Railway, in the valley of the Rimac, are the ruins of a necropolis, where are hundreds of graves (Pl. xxix. fig. 2). Some of them are 5 to 6 feet deep, others 2 to 3; whilst more are above the earth. But whether under or over the ground, they are all shaped inside with stone and plaster, and there is at the bottom a communication of a hole about 6 inches in diameter between each of the graves. Whether this was in the hope of allowing communion of the spirits after death we of course know not. The graves in these large mounds are fashioned inside with adobe, or sun-dried brick, and sometimes plastered.

In many burial grounds, such as the extensive tracts we find at Ancon, Pasamayo, Pacha-Camác, and those Mr. Blake has observed at Chacota Bay, southward of Arica, we find some graves with circular openings, walled with stones, and lined with a matting of reeds. Several of the bodies in these are placed in the squatting posture, and a few perfectly upright. In my explorations I have found no warlike implements except clubs and slings. But bows and arrows have been taken out of the graves to the south of Arica—the arrow-shafts consisting of two pieces of reed tied together, and tipped with sharp-pointed and barbed flint-heads. From several of the graves at Chosica I took out slings, pieces of bone made in the shape of beads, with a paper of red colouring stuff (probably cinnabar), needles, copper shawl-pins, bits of cloth, balls of thread, and sandals of untanned leather. I regret to find, that in Sir J. Lubbock's work on "*Prehistoric Times*," published in 1865, and, therefore, three years subsequent to Professor Wilson's book on "*Prehistoric Man*," in 1862, there is no mention of anything about Peru, except an extract from the latter as to the absence of the potter's wheel amongst the ancient Peruvian manufac-

turers in the ceramic ware.* Yet I am firmly convinced that the mounds of Peru, from which this potteryware has been taken, are not only prehistoric, but possibly belonging to an age far and away before those of the Ohio and Mississippi valleys described by Messrs. Squier and Davis.† One service—of a negative kind though it be—Sir John has given to the practical investigations that have yet to be made on the subject, inasmuch as he has not made any allusion to the Pelion-upon-Ossa fables that have been chronicled by all the Spanish writers on the apocryphal stories about the Incas.

In part of the Andine territory explored by Señor Raimondi, he describes to us large masses of limestone and granite, in which graves were cut by the early inhabitants of several districts. His observations, up to the present published, refer chiefly to the departments of Loreto and Ancachs. In the former, Señor Raimondi found the native population to be very low in intelligence, divided into distinct tribes, each of which speaks a different language. From what is said of their barbarity till they were subdued—the old story—by the Spaniards in 1676 it is difficult to imagine them having any relation to the grand people whose monuments, *ære perennius*, lie around. The tribe of Teneros district, conquered in 1517, speak Quichua, the language of the Incas, and they are wonderful carriers. Of the many other tribes in Loreto—why not respect its old Indian name, whatever it was, ye conquerors and despoilers of Peru?—the Yaguas, Cocamillas, Orejones, Cochiquinas, and a host besides, we can find nothing in their habits of to-day bearing on the ancient civilisation: for they are not workers, as the early Peruvians were. Some of these tribes, in that part of Loreto bordering on the Amazon valley, go naked. Nearly all live on what they kill with their arrows on the earth and in the air, with the addition of such fish as the rivers afford them. But it is uncalled-for to speak of them as the author does, in the light of savage infidels, as contrasted with some of their brethren, who, because they have gone over to the missions, are styled “civilised.” Please remember the motherly love that must have been in the breast of that woman whom I mentioned in my former paper, as going to have her child baptised at the Sarayaco mission, whilst its head was in process of being moulded to the shape depicted in my book.

Señor Raimondi's first pamphlet‡ makes no mention about the ancient inhabitants or the antiquities of the province,

* “Prehistoric Times,” p. 205.

† “Smithsonian Proceedings.”

‡ “Apuntes sobre la Provincia Litoral de Loreto,” por Antonio Raimondi, Profesor de Historia Natural de la Facultad de Medicina. Lima, 1862.

although there is scarcely a square acre of Peruvian territory that does not contain relics of its antique times. His last work, recently published in Lima,* and which sets forth wonderful accounts of the mineral riches of Ancachs, tells us of the marvellous ruins that abound everywhere. Amongst these are the fortifications of huge mounds, built up with human hands, such as he found across the river Llullan, at Caraz and Pumacayan. These great masses, constructed of large stones fitted together artistically, and without any mortar, Mr. Raimondi describes as no doubt belonging to a time "far anterior to the Incas." He tells us of huge rocks placed in horizontal positions—buttresses, bastions, and large flat stones for roofs—over some of the entrance-gates. Near the burial ground of Yungay, towards the river, is another of these, called Huansacay. Amongst the stones there many are rounded, and some are chiselled flat. A like structure is at Tumshacayco, and all these seem to have their integrity being daily broken up, so as to afford building material for the degenerate descendants of the ancient Peruvians. Interior to the port of Casma, many of such ruins exist at the feet of the Cordilleras. One of the most noticeable of these is a large castle, quite close to a place called by the Spaniards Malpaso (bad pass), and to this old relic they have given the title of Castillo de Calaveras (or Castle of the Skulls). It has four large walls of elliptic form, enclosing in the centre, and on the most elevated portion of the fortification mound, two houses of circular shape. All these walls are constructed of enormous blocks, which, though not cut into form, present a smooth surface; for the small interstices are filled up with little stones that are made almost to dovetail into one another. The outside wall has four doors of elliptical diameter. At the entrance this is nearly four yards thick, forming, in fact, a vestibule, covered over with trunks of algaroba wood, which are placed side by side; and these trunks appear as smooth as if they had been planed. Probably they were scraped with obsidian. That this was a castle for defence may be assumed from the fact that the doors all open in front of the wall, inside, and not opposite the outer door; whilst all the entrances within are so arranged that they have to be approached by a narrow alley, through which only one person at a time can pass. Around and about in the valley are several remnants of walls of 8 to 10 yards in height.

Near the Bay of Santa—the district where we are told by that romancist, Garcilasso de la Vega, the Incas met with the sturdiest resistance in their invasion of the coast valleys—

* "El Departamento de Ancachs y sus Riquezas Minerales," por A. Raimondi, publicado por Enrique Meiggs. Lima, 1873.

large quantities of excellent style of pottery have been dug up. The neighbourhood is likewise remarkable for several huge mounds, or huacas, which I saw when I was there a few years ago, but had not leisure or opportunity to explore. Strange to say, Señor Raimondi does not mention them. Further on, at Huarmey, or Guarney, we have more of these. In this district, between Cuzmo and Huanchay, and not far from a small gold mine which is here, are several stones of diorite, engraved like to those that I saw on the Pacasmayo Railroad; others similar are observed at a place called Los Caleras, on the road to Arequipa. The marvellous thing about such rock writings is that they are done on exactly the same style of stone as those at the Yonan Pass, and at Arequipa, although these places are respectively 400 to 500 miles distant from each other. About this neighbourhood ruins of fortifications are likewise observed. Near all these Indian towns—farther on, through Huanyan, Conchucas, and Pomabamba—treasures of art in silver, potteryware of the finest kinds for household use, and of the coarser for mineral crucibles, have been excavated, and are still being discovered in abundance. The district of Pomabamba is the richest in antiquities of any that we have passed. Here is another place, called Paràrà,* at an elevation of beyond 12,000 feet above the level of the sea. In this place, almost perpetually covered with snow, and on the road between Pomabamba and Andamayo, exist other ruins of fortifications. There are lofty stone pillars about, and relics of houses everywhere. But the most wonderful thing is what remains of the fortifications of Lipa, situated on the heights of Pasa Cancha, to the N.N.E. of Andamayo. On Pasa Cancha, and close to the ridge of mountain, is a large number of fortified buttresses, intermingled with sepulchral monuments. One of these is thus described by Señor Raimondi†:—

“Some loose stones scattered here and there, without any seeming concurrence, attracted the attention of a few inhabitants of the place, who, having removed the earth, found, at the depth of a little more than a foot, a large stone with the upper face partly scooped out. The stone was more than three metres and a half (near to four yards) long, and three metres wide. It was about half a yard thick. Continuing the excavation to discover what was underneath, they found that this enormous cut stone leaned, on each of its sides, on a small wall, constructed likewise of stone, and served as a roof to another of cubic form, more than a yard and a half in breadth, and completely buried, leaving between the two a space of less than a metre. The cubic

* The Aymara name for grinding-stone.

† Op. cit. p. 182.

stone had a square excavation in the centre, of a metre and 20 centimetres (about a yard and a half) of depth, and 80 centimetres, or little over two feet, of breadth; and on the edge round was a groove, to which fitted another stone that served as a lid. All these were of a compact diorite, and chiselled to the greatest perfection. But the marvellous part of it appears to be that the hill on which this structure was erected was of sandstone, so that for some reason or other—say of their customs or traditions—instead of constructing a monument of the sandstone which was at hand, they brought these masses of diorite from a long distance. This monument was discovered in 1859. In the large square hole of the centre no body was found, but in the corners about were discovered other similar excavations, with the bones of children, and quantities of gold and silver of excellent workmanship."

No doubt this was intended for the mausoleum of some great man of the period, who failed to be the arbiter of his destiny, as regarded his last resting-place.

Subsequent explorations in the same locale and vicinity brought other archaeological treasures to light. Amongst them was found a burying place of rock, excavated and shaped like an egg cut in two parts, the upper serving as a lid to cover when the dead body was put in. Ashes to ashes! dust to dust! germ to germ! What a strange illustration of the touch of nature "that makes the whole world kin!"

One of the treasure-hunters here was much disappointed at the result of opening a stone coffin that he found. He was flattering himself, from hearing something rattle inside when it was being moved, that it must contain bars of silver, if not of gold, when lo! taking off the cover, it was full of horns of a sort of deer, known in the country by the name of *Taruca*.* At Piscobamba, too, Señor Raimondi writes of some antiquities of "*the time of the Incas*," the usual date of antiquity with all Peruvian writers; but he gives us no proof that the Incas ever were here at all. Caves are found full of bones of the ancient inhabitants—caves in places the most inaccessible, as it seems to have been the special care of the survivors to place their dead friends and relatives in the most out-of-the-way and uncomfortable positions.

At other ruins of castles, fortresses, and sepulchres in Jocos and Quitca, near this place, is precisely the same style of graves as described by me in a letter to Professor Busk,† relative to Ancon, six hundred miles distant, the circular ones being lined

* The *Cervus antiensis*.

† See "Journal of Anthropological Institute," vol. iii. No. 1, April, 1873, page 88.

inside with stones. These wells are only the apertures to burial vaults, one on each side, and one in front and back, in the shape of a cross, as it were. The skulls from all these were dolichocephalic; but though the occiput was very much developed, in most of them the facial angle was not at all depressed.

The town of Chavin (or, to distinguish it from another Chavin on the right bank of the Marañon, Chavin de Huantay) is rich in prehistoric treasures. Chavin is to the south of Huaraz, to which Mr. Meiggs' new railway from Chimbote will soon lead, and it is in a direct parallel with Casma from the sea. It is about 10,000 feet above the level of the ocean. The first of its remarkable antiquities is a bridge over the river Chavin. This is made of three large stones of granite brought from a great distance, as all the geological formation of the neighbourhood is of sandstone. Their dimensions are as follow:—

	Length.	Breadth.
1st	4·25 metres.	0·54 metres.
2nd	6·50 "	0·40 "
3rd	4·33 "	0·60 "

One is confounded at trying to guess by what mechanical appliances a granite stone, nearly twenty feet long and a foot and a half wide, could be transported over these mountain heights.

Passing across this bridge the traveller comes to a great wall, situated at the side of the road before getting into the town, and formed of stones nicely put together without any mortar. Besides this there are other remains of a building of quadrangular form, having two wings, approaching the river, and this is known as the Castle of Chavin. It is being pulled down, little by little, to build their huts, by the inhabitants of the town. Its walls are constructed of a mixture of granite and sandstone, the latter of which is showing the influence of time upon its wear. Nothing can speak more forcibly than this for its antiquity, as Peru is the most conservative of soils, as well as of climates. It consists chiefly of a quantity of extensive subterranean tunnels, canals, passages, and galleries, some of which cross at right angles. The entrance to these is not more than a yard high, so that the explorer must go in on all fours. Some of the inside galleries are not beyond 2 feet high, and occasionally you find yourself in a small room about 4 or 5 yards wide by 2 broad. The walls of passages are made of intermixed sandstone and granite. Here and there are small openings of a foot to a foot and a half wide, apparently for ventilation purposes.

Nearly in the centre of the ruins stands a large granite column, covered, in *bajorelievo*, with capricious designs. Amongst

these are several eyes, with mouths and great eye-teeth, of which we cannot guess the signification. Another granite stone has been taken out of the castle and is kept at a house in Chavin. It is of rectangular form, of 1 metre 80c. long by 70c. and 15c. thick, with engravings still more complicated than those of the pillar. This stone is completely smooth and polished. The sketching on it represents the caricature of a man, who holds in his hands a kind of staff or sceptre formed of a group of serpents, and on his head an ornament, on which is engraved a large number of snakes, open mouths, and eye-teeth, like the column before mentioned.

Señor Raimondi believes that the artist who did these works had the idea of representing the Genius of Evil. After several cogitations about the probable use of the place—finding it was not a mausoleum for the dead, believing it could not have been a temple for worship—he comes to the conclusion that it served as a fortress and a prison at the same time. This may be but a guess.

Yet, after all, what are our means of arriving at a notion of the anthropology of prehistoric times amongst such people, but guess, idea, dream-work, and speculation? If the Spaniards who, under Pizarro, laid waste the country in the sixteenth century had any taste for knowledge of history, they might have preserved a few truthful traditions of these old people. Instead of which they set to concocting a Munchausen story of the Incas, and handed it down to us with the most preposterous fictions about gold. How the walls of some houses were covered with gold; how they had golden pipes to convey the water, and the stones forming the baths were cemented with mortar made of gold and silver. Even the old pilot, Bartholomew Ruiz, commended by some of the Inca believers as the model of truth, describes one of the *Balsas* he met out at sea in connection with gold. This is a Peruvian craft, formed of huge timbers of light, porous wood, and with a flooring of reeds raised above them. Two masts sustained the large, square, cotton sail, and a moveable keel and rudder enabled the boatmen to steer. Exactly the style of float that I went ashore upon to San José, the port of Lambayeque, about eighteen months ago, from the steamer Quito, and the most unlikely craft to have even a suspicion of gold on board. But Ruiz must have found in this floating bundle of corkwood a rather aristocratic crew and passengers, for we are told: "On board of it Ruiz saw ornaments, displaying great skill, wrought in silver and gold, vases and mirrors (?) of burnished silver, curious fabrics, both cotton and woollen, and a pair of balances made to weigh the precious metal." The idea of balances to weigh gold on board

of a little craft, in such a rough sea as is generally in the northern Pacific, borders somewhat on the farcical. Atahualpa, too, had a lot of gold with him, at the baths of Caxamalpa, when he was ordered to be executed; and ten thousand llamas were on their way down from Cuzco to stop this barbarity, each llama carrying one hundred pounds weight of gold on its back. Ten hundred thousand pounds in weight of gold! It had only reached half-way when news arrived to the llama drivers of its being too late, as Atahualpa had been strangled. So, presto! the Indians and llamas skedaddled, and the gold evaporated, for nothing has ever been known of it to this day!

The prehistoric period of European civilisation appears to be marked by the primæval "stone period" preceding the earliest discovery of metallurgic art. Before the stone period in Peru, and in parts of valleys where rock is difficult of access, we see wonderful monuments of these mounds, which may rather be attributed to a previous "clay period." Many of the towns since buried by earthquakes and volcanoes, and recently turned up by the railway cuttings, show ruins of walls of most primitive mud bricks, of large lumps of clay put into a coalescing mass without shape or form.

After all, we know little more of the anthropology of prehistoric Peru than that its inhabitants were wonderful workers; had no written language hitherto known, except the rock engravings not yet deciphered; for the Quipus were Incaite. But they had discovered the use of metals and of alloy, could manufacture as well as dye cloth, and were skilled in potteryware, although they did not know of the potter's wheel. Of their warfare armaments we are ignorant, except in the matters of clubs, bows, arrows, and slings. Yet we may safely come to the conclusion that they constituted one of the earliest nations, who left no history or chronicle behind them, save what are daily becoming revealed in the works being exhumed from their burial mounds, and in the wonderful architecture with which their country is studded. Equally patent is the fact that they have gradually disappeared from the face of the earth, through some of those mysterious laws which divine Providence dispenses for the rise and fall of races of mankind. And whilst thinking solemnly over their decline and disappearance, we may feel what Mr. Mott* speaks of, namely, "the satisfaction in looking upon this world as a sacred garden, in which the nations of men are, as it were, the trees and flowers, each in its turn growing up according to its kind; each also coming to its natural climax, and then falling to decay, but only to give place and to give birth to others like it,

* "*Origin of Savage Life*," op. cit. page 44.

though not the same, by which a varied but equal beauty is maintained, and a constant purpose carried out, through ages of ages."

EXPLANATION OF PLATES XXVIII., XXIX., AND XXX.

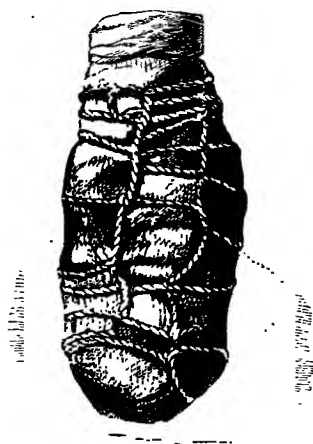
Plate XXVIII.—Bodies, wrapped in cloth and tied round; taken out of grave vaults at Chosica, Peru.

Plate XXIX.—Fig 1, view of the central *Huaca* of Pando, near Lima. Fig. 2, view of part of the ruins of graves at Paràrà, Peru.

Plate XXX.—Fig. 1, wooden idol found at a depth of 35 feet under guano in the Chincha Islands. Fig. 2, group of stone idol and water-vessels of pottery, found at a depth of 62 feet under guano in the Chincha Islands.

DISCUSSION.

M. DE LA ROSA, Col. LANE FOX, and the PRESIDENT having offered some remarks, the author, in reply, said that his definition of the term "prehistoric" meant the period, or any part thereof, previous to what we have written chronicles about; and as we have nothing written in reference to Peru anterior to the Spanish invasion, everything of the times before that event, comes, in his meaning, under the category of prehistoric. With regard to treasures and bodies being found under the guano (see Plate xxx.), he thought the guano islands in ancient times to have been used by the inhabitants of the mainland solely as places of refuge on occasions of invasion or of local wars. The calculations of Dr. Tschudi, referred to by M. de la Rosa, he believed to be erroneous in reference to the deposits of birds. In his last work ("Two Years in Peru," vol. i. p. 105) he had referred to a similar mistake made by Mr. Bollaert; for the larger portion of the guano of commerce was the deposit of seals, not of birds. Replying to Col. Lane Fox, concerning the images, terraces, and structures mentioned as being in the Pacific Islands, and resembling those in Peru, he derived his authority from Mark Twain's "Roughing It," as also from Mr. Mott's pamphlet on the "Origin of Savage Life," already quoted. It was, of course, for every one to entertain his own opinion on the subject of the Inca dynasty; but for his own doubts, he explained them by asking the question—How can we believe Garcilasso de la Vega, when we know the following incidents of his life? On his father's death he quitted Peru, in A.D. 1550. The first part of his "Commentaries" was licensed by the Inquisition in A.D. 1604, or more than half a century afterwards, and was published at Lisbon in A.D. 1609. Are we to believe the "Royal Commentaries" were all treasured up in the memory of the wonderful historian for fifty-four years? for at the time spoken of no communication of reporter's notes, monthly postage, or telegraphic messages was in vogue. Or does not the probability of

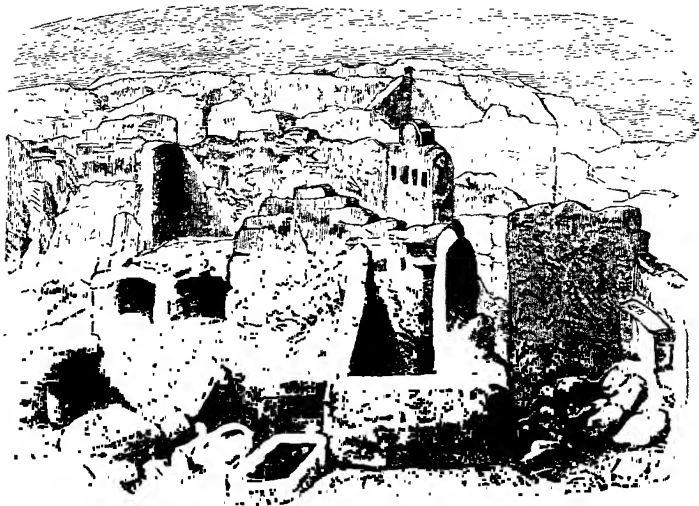


BODIES FROM GRAVES AT CHOSICA.

Fig. 1.



Fig. 2.



ANCIENT PERUVIAN BURIAL MOUND AND GRAVES.

Fig. 1.



Fig. 2.



IDOLS, &c., FROM GUANO OF THE CHINCHA ISLANDS.





MARSHALL ISLANDERS



Ann. Anthropolog. Inst. Vol II, PLXXXVII.



ANDAMAN ISLANDERS. 1872.

his romance about the Incas appear to be concocted in the National Library at Madrid, when we find, in the "Reports on the Discoveries of Peru," issued by the Hakluyt Society in 1872, and containing four memoirs, the title of Incas is never mentioned except by the translator? The principal of these is by Francisco de Xeres, secretary to the conqueror, Francisco Pizarro, *written by order*; and although it extends over a period of ten years, from A.D. 1524 to A.D. 1534, no mention from beginning to end is made of an Inca or Ynca. The titles of Lord, Cacique, Captain, or Chief, are given to the Indians, but nowhere do we find the word Ynca, unless in the notes of the translator. According to Xeres, Pizarro entered Caxamarca on Friday, the 15th of November, 1532, at the hour of vespers, where he found Atahualpa, or Atahualpa, waiting to receive him with 25,000 to 30,000 men. Pizarro had with him only 160 soldiers; yet the conqueror attacked and slaughtered, in two days after, more than 20,000 of these Indians, doing the little business, as Xeres tells us, in half an hour. If we do a small sum of division about this wonderful feat, we shall find that for 160 men to knock over 20,000 in half an hour it was necessary for each Spanish soldier to do his four men and a fraction per minute! More wonderful still is the story that some of these 160 went in pursuit of several fugitives, and brought back 2,000 as prisoners. The so-styled Ynca, Atahualpa, of whose dreadful fate every one who has read the beautiful pages of Prescott must be aware, is described by Xeres as Atabaliba, the Lord of Caxamalca, "where he had settled, and whence he continued to conquer other lands." By Xeres, as well as by Hernando Pizarro, in a letter of the latter to the Royal Audience of Santo Domingo (A.D. 1533), he is also called young Cuzco, in contradistinction to his father, old Cuzco, who, we are told by the translator, but not by the author, was the Inca Huayna Capac. It therefore appears to me probable that some future explorer may discover the cradle of the Incas to have been in the National Library at Madrid, and not in the Valley or Lake of Titicaca.

The Director read the following paper for the author :—

On the ANDAMANS and ANDAMANES. By G. E. DOBSON, B.A., M.B., F.L.S., &c. [With Plates xxxi., xxxii., and xxxiii.]

THE Andamans may be shortly described as a chain of narrow islands, nowhere exceeding twenty miles in breadth, forming the middle portion of a series of smaller islands and shoals lying between Cape Negrais, in Burma, on the north, and Acheen Point, in Sumatra, on the south. From evidence to be adduced hereafter, it will be seen that these islands and shoals were certainly for some time, perhaps for a short period only, connected with the main land to the north and east, most pro-

bably at a very recent geological epoch, when, as pointed out by Mr. Wallace,* the continent of Asia extended far southward beyond its present limits, including the islands of Sumatra, Java, and Borneo. At that epoch this series of islands and shoals now lying between Sumatra and Burma probably formed part of the eastern boundary of the Bay of Bengal, while that portion of the present Asiatic continent known as the Malay Peninsula formed a long ridge of elevated land far to the eastward of a great alluvial plain, through which a mighty river flowed, the (?) Irrawady of the past.

Investigation of the zoology of the islands shows—1st. That the islands were *last* connected with the Asiatic continent, most probably with that part known as Burma and the Malay Peninsula. 2ndly. That they probably formed portions of a large island placed in the delta of a great river. 3rdly. That they have not been at any time completely submerged since their separation from the continent.

The zoological facts on which these inferences are based are : 1. The absolute identity of almost every species of animal inhabiting the islands with species common also to India and Burma especially. 2. The presence of fresh-water fishes in the islands, of which almost every species (one species—query variety—only excepted) is found in the fresh waters of Burma.† 3. The great paucity of mammals, especially of all large mammals. Hitherto the only large mammal found in the islands is a pig (*Sus Andamanensis*), which has been shown to be a hybrid between two species from neighbouring countries, and has probably been introduced by design, or by having escaped from shipwrecks.‡ The other small mammals, about six species (not including bats§), consisting of rats and mice and a species of *Paradoxurus*, may have been introduced in the same manner. Most of these, if not all, are found in Burma. Although the islands are densely covered with lofty trees yielding an abundance of fruit, not a single monkey|| or squirrel has been discovered. This absence of mammals can only be accounted

* "The Malay Archipelago," Part I.

† Mr. Francis Day is my authority for this statement.

‡ Compare Lyell, "Principles of Geology," pp. 358. 359.

§ Of the very few species of bats as yet known to inhabit the Andamans, three are peculiar to these islands, or, at least, not yet recorded from other localities. One, *Pteropus Nicobaricus*, is common to the Andamans and Nicobars; and probably the bats of both these series of islands will, hereafter, be found to be nearly identical. The additional power of aerial locomotion possessed by bats renders them in a very much less degree subject to the operation of certain causes which effectually limit the distribution of other mammals.

|| "It is stated at the Andamans that many skulls of convicts have been sent away as those of the aborigines, whilst a *tame monkey*, received from India and given to the crew of a passing man-of-war, has lately received a new specific

for by supposing that when forming part of the Asiatic continent, the land now known as the Andamans lay between the mouths of a great river falling into the Bay of Bengal.

Mr. Bates and Mr. Wallace have shown how great rivers like the Amazon affect the distribution of species. Such great rivers present barriers as effectual as an arm of the sea, to which they may be likened. Hence the absence of monkeys, squirrels, and other small mammals, abundant in the adjacent countries, but not found in the Andamans, may be explained. In the same manner the presence of fresh-water fishes common to the Andamans and Burma may be understood.*

It is also evident that the islands have not been submerged since they ceased to form part of the continent of Asia, for this would have been attended with immediate destruction of the fresh-water fishes.

I have prefaced my remarks on the Andamanese with these notes on the zoology of the islands, and the evidence afforded therefrom of the changes that have probably taken place in their geographical relations during recent geological periods, in consequence of their importance in discussing some of the theories which have been advanced to account for the colonisation of the Andamans by their present peculiar inhabitants. These theories may be shortly summed up as follows:—

The present inhabitants of the Andamans are—

I. The descendants of shipwrecked negroes, escaped either from some Arab slave-ship carried out of its course by adverse winds, or from a slave-ship wrecked on the Andamans on its way to the Portuguese settlement in Pegu (Syme's "Embassy to Ava;" *Calcutta Monthly Register*, 1790).

II. Aborigines, not connected on any anatomical grounds with the people of any existing continent (Owen†).

III. Negrito-negroes (Huxley‡).

IV. Negritos, or Samangs, from the Malay Peninsula (Wallace§).

V. Mincopie branch of the Negrito division of an original negro stock.||

name in London as being indigenous on these islands."—"Observations on the Andamanese." By Surgeon Francis Day, "Proc. As. Soc. Beng., June, 1870," p. 153.

* Dr. Günther remarks:—"The fresh-water forms being limited to the river—or lake—systems which they inhabit, and being less exposed to the disturbances affecting the terrestrial animals, are singularly adapted for the elucidation of the original geographical distribution of the animals of the present creation."—Catalogue of Fishes in the British Museum. vol. viii., Pref. p. 9.

† "On the Psychological and Physical Characters of the Mincopies," &c.; "Report of Brit. Assoc.," 1861," p. 241.

‡ *Fortnightly Review*, 1865, p. 268.

§ "Malay Archipelago," vol. ii. p. 452 (1868).

|| Quatrefages, in "Revue d'Anthropologie," 1872.

I have arranged these theories of the origin of the Andamanese according to their date. The presence of a race of negroes (for such every one with a mind unbiassed by preconceived ideas of their origin will consider the Andamanese) in a chain of small islands surrounded by countries inhabited by races very different from them in every respect had, more than one hundred years ago, excited the wonder of travellers. Among the theories put forth to account for the origin of this people, the most generally accepted appears to have been that of Syme ("Embassy to Ava"), who considered them the descendants of negroes escaped from some wrecked Arab slave-ship carried out of its course by adverse winds; or that recorded in the *Calcutta Monthly Register* for 1790 (quoted by Professor Owen*), which supposes that they are descended from "African negroes imported by the Portuguese for slave labour in their settlement at Pegu, and which had been wrecked on the Andamans."

This hypothesis, that they are the descendants of shipwrecked African negroes, is dismissed by Professor Owen as untenable, first, on osteological grounds; and second, because "it is to be presumed that the Portuguese would import from the Guinea coast, or other mart of negro slaves, individuals of the usual stature, and it is incredible that their descendants, enjoying freedom in a tropical locality affording such a sufficiency, and even abundance of food as the Andamans are testified to supply,† should have degenerated in stature, in the course of two or three centuries, to the characteristic dwarfishness of the otherwise well-made, well-nourished, strong, and active natives of the Andaman Islands."‡ The argument that they are not negroes, founded on an examination of the form of their heads, which, as Mr. Busk has pointed out, present the rare combination of brachycephaly with woolly hair,§ is much lessened in value by recent observations.

Mr. E. T. Hamy, in a short paper published in the "*Comptes Rendus*,"|| points out the existence of brachycephalic negroes on the West Coast of Africa, and remarks that these people are to the other African negroes what the Negrito Mincopies, Aïtas, &c., are to the Oceanic negroes.

I believe that a much better proof that they are not descendants of shipwrecked African negroes may be derived from an examination of their habits and customs. These agree in no

* *loc. cit.*

† This assertion needs further proof.

‡ Owen, *l. c.*, p. 216.

§ Referred to by Huxley, *l. c.*

|| 'L'existence de nègres brachycephales sur la côte occidentale d'Afrique.' Feb. 1872, p. 379.

respect with those of any known African tribe. It is inconceivable that adult negroes, transferred to a distant land, would not have carried with them and handed down to their children the habits and customs of their ancestors. The negroes in the West Indies and America to this day preserve the fetish rites so common among the African tribes, and the acquisition of a new religion, and residence among strangers for more than 200 years, have not sufficed to lessen their belief in them.*

The results of Professor Owen's examination of the psychical and physical characters of the Andamanese are contained in the following short remarks:—"I conclude, therefore, that they are aborigines, and merely resemble negroes in blackness, or, rather, sootiness of the integumentary pigment, which might be due to constant exposure during many generations of this rude and primitive race. . . . I am not cognisant of any anatomical grounds for deriving the Andaman people from any existing continent; but in making these remarks I would offer no encouragement to the belief that they originated in the locality to which they are now confined. . . . The Andamanese are, perhaps, the most primitive, or lowest in the scale of civilisation, of the human race. They have no tradition, and, as has been before remarked, apparently no notion of their own origin.†

Mr. Wallace appears to hit upon the true relations of this curious people, in connecting them with the woolly-haired Samangs of the Malay Peninsula and Negritos of the Philippine Islands, and the same view is expressed by M. de Quatrefages in two exhaustive papers "On the Mincopies and Negrito Race generally."‡ M. de Quatrefages' investigations with regard to the Mincopies may be briefly stated as follows:—

1. That their position on an island to which nothing attracted strangers, has resulted in the preservation of a very great, if not

* Though it follows that Symes' theory is not admissible in accounting for the colonisation of the Andamans, yet such instances of colonisation are not wanting; and, great as the distance is from Africa to the Andamans, it is not impossible, though very improbable, that a ship laden with African negroes and a supply of food might go so far out of its course as to come within the influence of the south-west monsoon, and be by it carried up the Bay of Bengal, some of the crew surviving and escaping to land. Dr. J. D. MacDonald has informed me, that during Captain Erskine's cruise in H.M.S. *Havannah*, a party of natives passed from the King's Mill group to the Navigators' Islands, a distance of about 2,000 miles. He also mentions that a party, consisting of men, women, and children, left Fotuna, an island 50 miles north of the Fiji group, in an open boat provided with food, and never were heard of again by their friends on the islands. But Dr. MacDonald found in the New Hebrides, in an island known as "Erronan" to Europeans, a people in all respects agreeing with the inhabitants of Fotuna, near the Fijis, who used the same numerals, and called their island, not "Erronan," but Fotuna, after the parent island.

† Owen, *l. c.*

‡ "Revue d'Anthropologie," 1872.

absolute* purity of blood, so that the Mincopies of the Andamans may be taken as the type of the race to which they belong.

2. That they belong to an original negro stock (*tronc nègre*), of which the Negritos may be considered one of the branches (*branche*), and the Mincopies a branchlet (*rameau*) of the latter.

3. That the Mincopie branchlet is found in the Andamans, Nicobars, and in the Philippines, and is still represented on the continent in the Samangs of Malacca, and most probably primitively occupied all or part of India.

4. That the Mincopie branchlet has furnished the negro element of a portion, at least, of the Dravidian peoples. Further, to judge from characters afforded from the examination of skulls, some Pariahs are almost pure Mincopies.†

It is impossible to account for the presence of the wild tribes of Southern India—among which the dwellers in trees certainly occupy a lower place in the scale of civilisation than even the Andamanese—or of the peculiar Samangs of the interior of the Malay Peninsula, surrounded by races with which they have no connection whatever, except on the hypothesis that they are the few surviving descendants of a woolly-haired people which in ages past occupied lands south of the Himalayas, when the continent of Asia included within its southern limits the Andamans, Nicobars, Sumatra, Java, Borneo, and the Philippine Islands, and that the present inhabitants of the Andamans and the Negritos of the Philippines are also the remnants of those ancient Negrito inhabitants of Southern Asia which have almost disappeared before the invading Aryan and Mongolian races.

The Negritos most probably belong to the very same original stock‡ as the African negroes, occupying, at a very distant period, a great continent in the Indian Ocean, the “Lemuria” of Dr. Sc Slater, which seems to have once extended from Africa or Madagascar to the Malay Archipelago. At that period the southern coast of Asia was probably formed by the Himalayas, and the high lands of the peninsula of India were islands in the Indian Ocean inhabited by people belonging to the same race as that occupying the great continent southward of them, and whose descendants are still to be found in the homes of their forefathers. Though this great equatorial continent has almost wholly disappeared beneath the waters of the Indian Ocean, the animals which once inhabited it are represented by some surviving descendants, which, though long and widely separated,

* This is very doubtful. I agree with Mr. F. Day, that the chief of Rutland Island is probably a native of India. The women and children of crews shipwrecked on the coasts of countries inhabited by savages are often saved when all the male adults are murdered.

† Quatrefages, *l. c.*

‡ Tronc nègre of Quatrefages, *l. c.*

in countries once forming its extreme limits, still preserve most of the characters of their ancestors.*

In April, 1872, I visited the Andamans for the purpose of collecting zoological specimens. I was accompanied by Mr. Wood-Mason, of the Indian Museum, Calcutta, and we made Ross Island, Port Blair, our head-quarters. In order to make the most use of our time, we divided our labours, Mr. Wood-Mason undertaking to collect invertebrates, while the vertebrate portion of the collection was in my charge.

Although I traversed the forest for miles in every direction round Port Blair, almost every day for the succeeding month, I never met a single native. On the 4th May, however, an excursion to one of the "Andamanese Homes" was planned. My friend Dr. T. R. Lewis, who happened to visit Port Blair at the same time, accompanied me, and gave me most valuable assistance in taking the photographs which illustrate this paper. We proceeded about seven miles up Brigade Creek, the tidal estuary of a small stream running almost directly southwards to Port Blair, between two parallel ridges, clothed with probably the densest and loftiest forest in the world. The creek runs through a narrow alluvial flat at the base of these ridges, covered with mangrove trees, the deadness and dreariness of which are only relieved occasionally by the appearance of the lovely little azure kingfisher (*Alcedo Asiatica*), sitting on one of the slimy mangrove roots, or flying along the margin of the water, looking like a flash of many-coloured light against the dark oozy banks of the creek. Sometimes the slaty heron (*Herodias concolor*), a more fitting denizen of these shades, would be seen sitting motionless among the mangrove roots, watching for the appearance of some unlucky fish, but they were the only feathered inhabitants of these silent swamps. Higher up, as we left the alluvial flat, the stream narrowed very considerably, the mangroves disappeared, and were replaced by lofty forest trees, growing on the solid banks, or lying across them so as to seriously threaten our progress forwards. Many kinds of birds flew about, conspicuous among them the long-tailed paradise crow (*Dissemurus affinis*) and the lovely *Pericrocotus speciosus*, its brilliant scarlet breast looking like a clear flame among the dark leaves, while occasionally in the deep forest the drumming of the large, black, crimson-crested woodpecker might be heard.

The appearance of a large "dug-out" canoe, containing two perfectly naked natives, announced that we were near the "home," and soon, on rounding a curve of the stream, a large number of canoes appeared moored along a kind of landing-place. We were received by the wife of the chief, who had

* See Wallace, *l. c.*

hastily donned a frock provided by the Government to receive visitors in, but very soon afterwards, perceiving that no ladies were in our boat, she got rid of that unnecessary encumbrance, and presented herself in nature's garb, adorned by a single leaf, a garter tied below one knee, and a necklace composed of the finger- and toe-bones of her ancestors (see Plate xxxi.). At a short distance from the landing-place we found two long sheds—"the home"—built by the Government of Port Blair. The larger shed was filled with 110 Andamanese of all ages—men, women, and children. Some were engaged in cooking fish, others in mending their bows, and although the appearance of Europeans among them was a rare event, they scarcely noticed our arrival, very few leaving the shed to see what we were about. Outside the shed, reclining in the ashes of a cooking-place, we found the king, or chief of the tribe, half asleep. He gave us to understand he did not feel quite well, and relapsed into a doze.

Very soon after arrival I commenced to erect my photographic tent; but although this is a very remarkable object when erected, the natives scarcely took the trouble to look at it, and none expressed any surprise. Although none of the tribe exceeded 64 inches in height, so that on first seeing them we thought the shed contained none but boys and girls, I was especially struck by the remarkable contrast between the size of the males and females. The chief and his wife afforded a very average example of this (see Plate xxxi.). The central figure in Plate xxxii. is that of a girl brought up from infancy at the Andamanese Orphan School, in Ross Island. This girl I had seen almost every day, sitting in front of the school-house, and on Sunday at church, neatly dressed in white, and her head covered with a fair quantity of black, woolly hair. Four days previous to our visit to the "home" she had asked and obtained permission to rejoin her people, and she was now destitute of clothes, shaved, and greased with a mixture of olive-coloured mud and fat, and married, wanting but the finger- and toe-bone decorations to complete her toilet. This is the girl who, on seeing Mr. Wood-Mason, on his second visit to the islands in the following year, immediately recognised him, and, pointing to her greatly enlarged person, said with much pride, "*buchcha hai!*" The orphan children brought up at the school on Ross Island are taught Hindustani, which they impart to their people on returning to the woods, so that many of the tribes living in the vicinity of Port Blair now speak a curious mixture of Hindustani and Andamanese.

In the centre of the large group (Plate xxxiii.) a woman may be observed sitting, having a round object on one shoulder. This is the skull of her late husband, which, adorned with red

paint and fringes made from wood fibres, is carried about by the disconsolate widow till she obtains another partner. In the foreground two elderly women are seated—the king and queen—mother respectively.* The former wears a necklace of finger-bones; the latter, one made of the bones of the foot and pieces of ribs combined. The peculiar tattoo of the Andamans, described by Mr. Francis Day,† is here well seen.‡ Many of these markings seemed to me to have been produced by simply drawing the finger across the surface when freshly painted with a thick coating of the usual mixture of swine's fat and olive mud or red earth. The individual on the left of the same picture, holding an arrow in his hand, known as "Jumbo" to Europeans, rendered himself notorious some years ago by shooting a sailor through the heart who attempted to take liberties with one of the young Andamanese females. That he was also notorious among his people was evident when, on showing the finished negative to some of the young women, they immediately recognised the likeness, and pointed him out among the figures in the group, crying out, "Jumbo, Jumbo," and laughing immoderately.

One of the young men, who was evidently the dandy of the tribe, was strutting about in full dress, evidently very proud of his personal appearance. His full dress consisted in a coat of fresh olive-coloured mud paint on one side, and bright red paint on the other. Half his face was red, the other half olive, and the red paint on his body terminated in a festooned border along the middle of the chest and abdomen; the arms and legs were similarly adorned, the festooned border running down the outer side of the legs like the gold stripe in military trousers. This festooned margin is well shown on the chest of the young girl in Plate xxxii. The wife of the chief of Rutland Island was photographed at Ross Island about a week subsequent to our visit to the "home," but the photograph does not accompany this paper. She is the largest and fattest Andamanese female living in the vicinity of Port Blair; but even in her, no appearance of the fatty deposits in the buttocks, so characteristic of the Hottentot women, can be seen. I mention this, as some have stated that the Andamanese females resemble Hottentots in this respect.

We brought a large shark with us as one of our presents for them. It was interesting to observe how they removed the entrails, separating the gall-bladder with much care; they then broiled large pieces on a wood fire.

* One of these figures is unavoidably omitted in the Heliotype.

† "Proc. Asiatic Soc. Bengal," June, 1870, p. 159.

‡ With the figures in this and other plates, contrast the ancient Egyptian types of countenance represented in the plates accompanying Prof. Owen's paper, at pp. 224 and 228 of this Journal.

The Andamanese, at least the inhabitants of the Southern Island, erect no kind of house whatever. They are fond of a sandy beach, with high cliffs, which shelter them from the wind. When walking along the beach in the vicinity of Port Mouat, I have often come across one of their temporary habitations, which consists of a hole scooped out in the sand, beneath an overhanging rock, large enough to contain a single person. They rarely occupy the same sleeping places two nights in succession.

The inhabitants of the Little Andaman erect enormous beehive-like huts, with the roofs coming close to the ground. They have, probably, learned to construct them from observing the huts of the Nicobarese in the not far distant island of Car-Nicobar during some of their forays, or have been taught to construct them by their Nicobarese prisoners.

The construction of their peculiar arrows and fish spears with moveable heads exhibits much ingenuity, and the use of no small reasoning power in adapting means to an end. The arrow-head (made of iron obtained from ships wrecked on the coast) consists of a triangular piece of flattened iron, fastened to the end of a small stick about four inches in length. At the base of the head, from one to three iron barbs are also fastened to the stick. The end of this short stick fits into a socket provided for it in the extremity of the shaft of the arrow. The connection between the head and shaft is also maintained by a flattened thong (made from wood fibres) about eight inches in length, which is attached by one end to the distal extremity of the shaft, and by the other to the stick supporting the head.

When a pig is struck by this arrow, the head is retained in the flesh of the animal by the barbs; but the end of the short stick supporting the head is soon knocked out of its socket, and the shaft, still connected with it by the thong, is carried along almost at right angles, and quickly becoming entangled in some roots or other obstacles, detains the animal till the hunters come up. Without such an instrument it would be impossible to overtake a wounded pig in the dense forest which covers all parts of the islands.

The fish spears are provided similarly with moveable heads, but with a much longer thong, which allows the shaft to float, and so indicate the course of the wounded fish.

I shall not enter upon any further account of the manners and customs of the Andamanese, as these have been well described in Mr. Francis Day's paper, 'Observations on the Andamanese,' published in the June number of the "Proceedings of the Asiatic Society of Bengal," 1870. Dr. Mouat's

interesting book is well known, and Colonel Tickell* and Mr. de Roëpstorff† have published short vocabularies of the language. A paper on 'Andamanese Kjökken-möddings,' by the late Dr. F. Stoliczka, and 'Notes on a Trip to the Andamans,' by Mr. V. Ball, will also be found in the "Journal and Proceedings of the Asiatic Society of Bengal."

It would be most desirable that some one would endeavour to collect, as far as possible, a complete vocabulary of Andamanese words. The results of an examination of their language would probably afford a much surer clue to their origin than any hitherto adduced.

EXPLANATION OF PLATES XXXI., XXXII., AND XXXIII.

Plate XXXI.—Chief of a tribe of Andamanese (Southern Island) and his wife, showing contrast of size.

Plate XXXII.—Group of Andamanese young women, southern tribe (Southern Island).

Plate XXXIII.—Group of Andamanese of the Southern Island.

All the plates are from photographs taken by the author, May, 1872.

Mr. Hyde Clarke contributed the following note :

NOTE on the LANGUAGES of the ANDAMANS. By HYDE CLARKE.

It is much to be regretted that the vocabularies of the Andamans are very scanty, as are those of the languages admitting of comparison. There is, however, sufficient material to admit of some observations being made.

The various vocabularies come under two classes, that of Colebrooke and that of Tickell, and each is distinct and has distinct relations, presenting a remarkable phenomenon. The Colebrooke Mincopie is allied apparently to—

Gonga of North-East Africa ;
Shoshoni, Utah, Comanch of North America ;
Bayano and Darien of Central America ; and
Mayoruña, Kiriri, and Sabuya of Brazil.

The Tickell Mincopie is allied to—

Natchez, Creek, and Choctaw of N. America ; and
Alikulip and Tekeenika of Tierra del Fuego.

It also exhibits strong affinities with some languages of Central India, as Naikude, Keikude, Gadaba, and Yerukala.

* "Journ. Asiat. Soc. Beng.," 1864.

† "Proc. Asiat. Soc. Beng.," 1870.

As the allied races are generally short in stature and low in culture, I have proposed for them the name of Pygmean.

In the Colebrooke Mincopie class, *Tabie* is *moon* in the Andamans, and *sun* in North and South America and in Africa. *Nunu* is *tongue* in South America, and *mouth* in Africa. The prefix *Na* or *Nau* is found in this class.

In the Tickell Mincopie—

Eye is *dal, dol*, Andaman—*toll*, Creek.

Stone is *tylee*, *tulle*, Chocktaw.

Tongue is *kytela*, *telowah*, Creek.

In the prehistoric languages *stone* sometimes conformed to *head*, but here it appears to conform to *eye*. As in many cases, *eye*, the organ, and *I*, the personal pronoun, conform.

DISCUSSION.

MR. W. L. DISTANT said that, in Mr. Dobson's very interesting paper one could not but notice the great difference between the inhabitants of the Andaman and those of the Nicobar Islands. Car-Nicobar, which the speaker visited a few years ago, is but some eighty miles to the south of the Little Andaman, but has a very different flora and fauna. The ethnic differences are alone considerable. The Andamanese are of a negro or negrito stock, with woolly hair, whilst the Car-Nicobarians are evidently of a more Malayan type, with long, lank, black hair. Their habits are also greatly dissimilar, and the social position of the inhabitants of Car-Nicobar is far above that of their Andaman neighbours. The coconut palm, so abundant in the Nicobars, has been reported as being almost wanting in the Andamans. Among the few mammals indigenous to the two groups of islands, there are forms peculiar to each locality, and Mr. Bowdler Sharpe, of the British Museum, informs me that the same thing is observed in comparing the birds of the two areas. This division between the two faunæ and floræ is analogous to what Mr. Wallace pointed out in the Malayan Archipelago, and the line of demarcation seems to be the same, an interval of deep sea, the "Ten Degree Channel," showing that there can have been no union of the two series of islands for a great lapse of time, even if there ever has been.

MR. PARK HARRISON and the PRESIDENT also made a few observations.

The PRESIDENT announced that the auditors of the accounts for 1874 had been appointed, viz. :—Mr. J. E. Price, on behalf of the Council, and Mr. Archibald Hamilton, for the members. The meeting then adjourned.

ANNUAL GENERAL MEETING.

JANUARY 26TH, 1875.

Professor BUSK, F.R.S., *President, in the Chair.*

The minutes of the last Annual Meeting were read and confirmed.

The President appointed as Scrutineers of the Ballot, Sir Duncan Gibb and Mr. Distant, and declared the Ballot to be then opened.

The Treasurer read his Financial Statement, and submitted the Balance Sheet (see next page).

On the motion of Mr. FRANKS, seconded by Mr. LLOYD, the Financial Report was adopted.

Mr. E. CHARLESWORTH moved the following resolution—
“That the special thanks of the Institute be given to those members who have so generously subscribed the sum of £640 to free the Institute from a debt which has so long embarrassed it financially, and so seriously limited its sphere of action in the promotion of Anthropological Science.”

In seconding the motion, Major S. R. I. OWEN said that it ought to be generally known that the Institute possessed a fine library, and a reading-room which was open to the members daily. That room could be made of great use by members desirous of carrying on adjourned discussions on papers of special interest to them read at the fortnightly meetings. Members might conveniently meet there by appointment, to discuss matters of anthropological interest in each of the departments of the science. They should bring, or introduce by letters to the secretary, those of their friends who might wish to be present at preliminary or adjourned discussions. One result would be that valuable papers and new members would be brought to the Institute. The discussions at the regular meetings would often be of more value if the opportunities of preliminary discussions were thus facilitated. Each day in the week might be devoted to some particular section, so that members and visitors coming on those days would be likely to meet others interested in their own special branch of study. That arrangement need not be allowed to interfere with gatherings of a more ephemeral nature. Let it be thoroughly understood that meetings of members and their friends by appointment would not be looked upon as an intrusion, but as a legitimate use of our resources and accommodation, and a fresh stimulus, which it seemed much to need, would be given to the Institute.

Motion carried unanimously.

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.
Statement of Income and Expenditure for the Year ending Dec. 31st, 1874.

RECEIPTS.		PAYMENTS.	
To BALANCES, January 1st, 1874:		By Payments on account of:	
In Bank	£ s. d. 113 12 5	PRINTING—Richards	£ s. d. 640 10 4
In hand	10 0 0	LITHOGRAPHY—Bartholomew	12 3 0
	123 12 5	Kell Brothers	52 10 0
" SUBSCRIPTIONS Received:		Maclure & Co.	4 10 9
Annual {	579 12 0	C. F. Kell	57 18 6
Bank. {	75 10 0	West & Co.	20 8 6
Life Compositions	42 0 0		127 10 9
" REDEMPTION FUND Receipts.		RENT, OFFICE, &c.:	
" SALES of Publications:		Rent	227 10 0
Longmans	9 17 7	House Expenses	27 17 3
Office Sales	2 8 0	Tea and Coffee	31 7 6
	12 5 7	Office Sundries	5 18 0
		Bethnal Green	6 5 0
		London Library Subscription	3 0 0
			301 17 9
		SALARIES, Commissions, &c.:	
		Secretary	100 0 0
		Clerk	70 0 0
		Collector—Commission	34 15 6
		Stamps, Bills	2 13 0
			207 8 6
		POSTAGES, Letters and Books:	
		General post	25 11 8
		Journal post	13 6 1
			38 17 9
		ADVERTISEMENTS, &c.:	
		Advertisements	52 8 6
		Stationery	12 16 9
			65 5 3
		BALANCES:	
		Bank	85 15 11
		In hand	7 12 3
			93 8 2
			£1,471 18 6

We have examined the above account, and find it correct.

A. HAMILTON,
JOHN EDWARD PRICE, } *Auditors.*

£1,471 18 6

The Director read the following Report :

REPORT of COUNCIL of the ANTHROPOLOGICAL INSTITUTE of
GREAT BRITAIN AND IRELAND for 1874.

THE Institute has held fifteen ordinary meetings and one special meeting during the year, at which the following communications were made :—

1. On the Nagas and Neighbouring Tribes. By S. E. Peal, Esq.
2. On Stone Monuments of the Khasi Hills. By C. B. Clarke, Esq.
3. On a Samoiede Skull from the Museum of the Royal College of Surgeons. By Professor George Busk, F.R.S.
4. An account of the Discovery of Skulls in the Peat of the Isle of Ely. By Professor Marshall, F.R.S.
5. Explorations amongst Ancient Burial Grounds, chiefly on the Sea-coast Valleys of Peru. Part II. By Mr. Consul T. J. Hutchinson.
6. On a Collection of Skulls and Implements brought from Palestine by Mr. Drake. By A. W. Franks, Esq., F.R.S., and C. F. Tyrwhitt Drake, Esq.
7. On the Beothucs, a Tribe of Red Indians, supposed to be extinct, which formerly inhabited Newfoundland ; and
8. Notes on Indian Remains found on the Coast of Labrador. By T. G. Biddle Lloyd, C.E.
9. On a peculiar Neolithic Implement from Antrim. By Dr. Sinclair Holden.
10. On the Mixed or Half-Breed Races of North Western Canada. By Dr. A. P. Reid.
11. Notes on the Mixed Races of Australia, and their migrations. By the Rev. George Taplin.
12. Notes on Skulls from a Burial Ground near Tiflis. By Commander Telfer, R.N.
13. The Serpent in connection with Primitive Metallurgy. By Miss A. W. Buckland.
14. Notes on an Ashanti Skull. By Professor George Busk, F.R.S.
15. On the Origin and Development of the Mental Function in Man. By the Rev. Dunbar I. Heath, M.A., Treasurer.
16. On the Mental Differences between the Sexes. By W. L. Distant, Esq.
17. Description of an Ashanti Fetish Curse. By H. H. Howorth, Esq., M.A.
18. Description of a Series of Flint Implements from Canterbury and Reculver. By John Brent, Esq.
19. On the Nonhistoric Stone Monuments of the Mediterranean, a Series of five Papers. By Captam S. P. Oliver, R.A.
20. Strictures on Darwinism. Part III. On Gradual Variation. By H. H. Howorth, Esq.
21. Note on the Evidences of Culture among the Ashantis and Neighbouring Tribes. By Hyde Clarke, Esq.
22. On Statistics obtained from Schools. By Francis Galton, Esq., F.R.S.
23. On the Excess of Female Population in the West Indies. By Francis Galton, Esq., F.R.S.
24. On the Extinction of Families. By Francis Galton, Esq., and the Rev. H. W. Watson.
25. On Rude Stone Monuments of the Nágás. By Major Godwin Austen.
26. Researches in Prehistoric and Protohistoric Comparative Philology, Mythology, and Archæology, in connection with the Origin of Culture in America, and its Propagation by the Sumerian or Akkad Races. By Hyde Clarke, Esq.
27. On the Discovery of Stone Implements in Egypt. By Sir John Lubbock, Bart., M.P.
28. On the Ethnology of Egypt. By Professor Richard Owen, C.B., F.R.S.
29. On the Batchás of Central Asia. By Dr. Eugene Schuyler.

30. On Ethnic Psychology. By Robert Dunn, Esq., F.R.C.S.
31. On the Relative Ages of Cremation and Contracted Burial in Derbyshire in the Neolithic and Bronze Ages. By Rooke Pennington, Esq., LL.B.
32. On Mythological Birds, ethnologically considered. By Miss A. W. Buckland.
33. On the Principles of Classification adopted in the Arrangement of his Anthropological Collection now exhibited in the East London Museum. By Col. A. Lane Fox.
34. Report on the Anthropological Department of the British Association at Belfast. By F. W. Rudler, Esq.
35. Report on the Ethnological Section of the Congress of Orientalists held in London. By Hyde Clarke, Esq.
36. On a Series of about Two Hundred Flint and Chert Arrow-heads, Flakes, &c., from the Rio Negro, Patagonia, with some Remarks on the Stability of Form observable in Stone Implements. By Col. A. Lane Fox.
37. Notes on the Ruins in the Neighbourhood of Palmyra. By C. Cotesworth, Esq. With Remarks upon the Human Remains found therein. By Professor Busk, F.R.S.
38. On some Peruvian Antiquities. By William Bollaert, Esq., F.R.G.S.
39. Some account of a Leaf-wearing Tribe on the Western Coast of India. By M. J. Walhouse, Esq.
40. Notes on some Tumuli and Stone Circles near Castleton, Derbyshire. By Rooke Pennington, Esq., LL.B.
41. On Early Modes of Navigation, tracing the Development of Ship Forms. By Col. A. Lane Fox.

All these papers were read at the rooms of the Institute, with the exception of that by Colonel Lane Fox, "On the Principles of Classification adopted in the Arrangement of his Anthropological Collection now Exhibited in the East London Museum," which was read at a special meeting, held, by permission of the Science and Art Department, at the Bethnal Green Museum. To this meeting ladies were invited, and Colonel Lane Fox's collection of ancient and modern weapons, as well as the objects of art and other attractions of the Museum, was inspected by a large number of members and visitors. The Council have it in contemplation to hold similar special meetings as opportunity may offer.

Eighteen ordinary members have been elected during the year.

Trelawney Saunders, Esq., has been elected a corresponding member.

Twenty ordinary members have withdrawn since the last anniversary.

The Institute has lost, through death, Mr. John Martin, Captain R. J. Morrison, Mr. I. Kingwill Gay, Rev. A. C. Bell, Mr. John Smith, Mr. Henry Mathews, Mr. George Latimer, Dr. Archibald Campbell, Mr. B. Bond Cabbell; and one honorary member, Mr. George Folsom.

Among these names the Council cannot pass without special mention that of one member of their own body, Dr. Archibald Campbell. It is hoped that some account of his life and public services will, on a future occasion, be laid before the members;

of his ever-ready assistance and assiduous attention to his duties on the Council they have the most grateful recollection.

To this list the last few days have added the name of one of the earliest and most valued members of the Institute, Canon Kingsley, who always took a deep interest in our proceedings and in anthropological science.

The following are the names of donors to the Library and Museum during the past year:—

The Imperial Society of Naturalists, Moscow; Department of State, U.S. America; The Bengal Government; Royal Academy of Copenhagen; Imperial Academy of Sciences, Vienna; Royal Society; Editor of *La Revue Scientifique*; Editor of *Archiv für Anthropologie*; Royal Geographical Society; A. W. Franks, Esq.; Anthropological Society of Vienna; Mr. Consul T. J. Hutchinson; Anthropological Society of Paris; M. A. Roujon; Bengal Asiatic Society; Dr. F. Dally; Charles de Scherzer, Esq.; Smithsonian Institution; Berlin Anthropological Society; Royal United Service Institution; E. Burnet Tylor, Esq.; East India Association; Royal Academy of Sciences of Amsterdam; Editor of *Cosmos*; Editor of *Nature*; Anthropological Society of Spain; United States Geological Survey; Society of Antiquaries of London; Geologists Association; Messrs. May and Son; Dr. Edward Jarvis; Oliver Warner, Esq.; The Right Hon. Lord Arthur Russell; Social Science Association; The Rev. James Graves; Logan D. H. Russell, Esq.; The Canadian Institute; Prof. M. Perty; Enrique Meiggs, Esq.; Dr. A. Weisbach; Major Godwin Austen; Anton. Bachmaier, Esq.; The Registrar-General of New Zealand; James Burns, Esq.; Dr. N. B. Wolfe; The Manx Society; M. Gerard de Raille; Royal Institution of Cornwall; American Philosophical Society; Dr. Robert Peel; Royal Asiatic Society of Great Britain and Ireland; Francis Galton, Esq.; W. S. Jeron, Esq.; Charles Bray, Esq.; Col. A. Lane Fox; British Association; Joseph Boulton, Esq.; Philo-ophical Society of Glasgow; Dr. John Shortt; Prof. Antonio Garbiglietti; Boston Society of Natural History; F. V. Hayden, Esq.; Royal Academy of Sciences of Belgium; The Rev. T. Felton Falkner; Geological Society of Glasgow; Dr. J. Simms; M. Moggridge, Esq.; New Zealand Institute; Dr. Paul Topinard; Royal Society of Victoria; The Secretary of State for the Colonies; Devonshire Association; Executors of the late Henry Christy, Esq.; M. Ernest Chantre; W. Pengelly, Esq.; Madame Clémence Royer; Charles Darwin, Esq.; Major S. R. I. Owen; Dr. J. M. Toner; Board of Public Education, Pennsylvania; Asiatic Society of Japan; H. W. Bellew, Esq., C.S.I.; The Rev. John Campbell.

The most important event of the past year to the Institute is the successful raising of a fund to relieve it of the load of debt with which it has been burdened since its formation. This has been accomplished by the following munificent donations:—

ANTHROPOLOGICAL INSTITUTE.—REDEMPTION FUND.

SUBSCRIPTIONS.

	£	s.	d.
Professor George Busk, F.R.S., <i>President</i>	...	50	0 0
Robert B. Holt, Esq., F.R.S.L.	...	2	2 0
Frederic Ouvry, Esq., F.S.A. ...	...	5	5 0
B. H. Hodgson, Esq. ...	...	5	0 0
George Hawkins, Esq. ...	...	5	0 0
W. Morrison, Esq. ...	...	5	0 0
J. H. Challis, Esq. ...	...	10	0 0

	£	s.	d.
W. Spottiswoode, Esq., F.R.S. ...	5	0	0
J. W. Barnes, Esq. ...	1	0	0
E. B. Evans, Esq. ...	5	0	0
H. Muirhead, Esq. ...	2	2	0
Richard Worsley, Esq. ...	3	3	0
John S. Phené, Esq., F.S.A. ...	2	2	0
Rt. Hon. Lord Arthur Russell, M.P. ...	5	0	0
John E. Lee, Esq. ...	5	0	0
J. E. Killick, Esq. ...	2	2	0
Andrew Lang, Esq. ...	1	1	0
R. D. Darbishire, Esq. ...	5	0	0
Rev. Tullie Cornthwaite ...	1	1	0
Edward Harris, Esq. ...	5	5	0
George Bertram, Esq. ...	2	2	0
Francis Galton, Esq., F.R.S. ...	10	10	0
A. W. Franks, Esq., M.A., F.R.S., Dir. S.A. ...	50	0	0
S. E. Bouverie Pusey, Esq. ...	15	0	0
Robert Dunn, Esq., F.R.C.S. ...	10	0	0
Sir George Balfour, K.C.B. ...	2	2	0
W. Robinson, Esq. ...	2	2	0
W. Chamberlin, Esq. ...	3	3	0
W. R. Greg, Esq. ...	2	0	0
W. Jennings, Esq. ...	2	2	0
T. B. Peacock, Esq., M.D. ...	1	1	0
His Grace the Duke of Devonshire, K.G. ...	25	0	0
William Long, Esq. ...	2	2	0
J. S. Bartrum, Esq. ...	1	1	0
Sir William Armstrong ...	3	3	0
F. G. H. Price, Esq., F.G.S. ...	5	5	0
F. W. Rudler, Esq., F.G.S. ...	5	0	0
David Forbes, Esq., F.R.S. ...	50	0	0
John Evans, Esq., F.R.S. ...	50	0	0
James Heywood, Esq., F.R.S. ...	20	0	0
A. Campbell, Esq., M.D. ...	5	0	0
C. Richardson, Esq. ...	1	1	0
E. H. King, Esq. ...	2	2	0
General J. Drummond ...	2	0	0
Philip Southby, Esq. ...	1	1	0
Col. Lane Fox, V.P.S.A. ...	30	0	0
Sir Walter Elliot ...	2	0	0
J. Milligan, Esq. ...	5	0	0
S. W. North, Esq. ...	1	1	0
J. Jeremiah, jun., Esq. ...	0	10	0
F. Hovenden, Esq. ...	3	3	0
Edward Backhouse, Esq. ...	5	0	0
E. B. Tylor, Esq., F.R.S. ...	10	0	0
A. Hamilton, Esq. ...	10	0	0
John Beddoe, Esq., M.D., F.R.S. ...	5	0	0
Professor Huxley, LL.D., F.R.S. ...	5	0	0
Sir William Erle ...	2	2	0
P. C. Hardwick, Esq., F.S.A., R.A. ...	10	0	0
Consul T. J. Hutchinson, F.R.G.S. ...	2	2	0
Right Hon. the Earl of Dunraven ...	10	0	0
Prof. G. Rolleston, F.R.S. ...	5	5	0
C. Cornish Browne, Esq. ...	5	0	0
B. Nicholson, Esq. ...	1	1	0
A. Sanders, Esq. ...	2	0	0
M. J. Walhouse, Esq. ...	1	1	0
Rev. John Dingle, M.A. ...	0	2	6
J. Park Harrison, Esq., M.A. ...	5	0	0

	£	s.	d.
Bernard Quaritch, Esq. ...	2	2	0
J. Campbell, Esq., L.R.C.S. Ed., R.N. ...	2	0	0
J. Prestwich, Esq., F.R.S. ...	2	2	0
Colonel Cholmondeley ...	2	2	0
Rev. D. I. Heath, M.A., <i>Treasurer</i> ...	10	0	0
T. J. Laing, Esq. ...	2	0	0
M. Moggridge, Esq. ...	2	0	0
A. V. Nursing Row, Esq. ...	2	2	0
Thomas Richards, Esq. ...	50	0	0
C. Robert Des Ruffières, Esq., F.R.S.L... ..	10	0	0
W. Gill Ranger, Esq. ...	2	2	0
E. W. Brabrook, Esq., F.S.A., <i>Director</i> . .	5	0	0
John E. Price, Esq., F.S.A. ...	5	0	0
Sir Duncan Gibb, Bart., M.D... ..	2	2	0
Hyde Clarke, Esq. ...	5	5	0
Rev. Wm. Greenwell ..	3	3	0
Major-Gen. Sir Arthur Phayre ...	2	2	0
Lord Talbot de Malahide ...	2	2	0
Prof. David Duncan ...	2	2	0
H. H. Howorth, Esq. ...	5	0	0
Gujputter Rao, Esq. ...	5	5	0
H. G. Bohn, Esq. ...	5	5	0
George Harris, Esq., LL.D. ...	5	5	0
Sir John Lubbock, Bart., F.R.S.* ...	50	0	0
	<u>£702</u>	<u>8</u>	<u>6</u>

Freed from this burden of debt, the Institute will now be able to take measures for the more prompt publication of the many valuable papers laid before the members, and may even contemplate the issue of standard works in addition. For this purpose, however, it is necessary that considerable accessions to the number of subscribing members should be obtained, and the Council recommend earnestly to the members at large the necessity of inducing students of anthropology to join their ranks.

The President of the Institute, Professor George Busk, has, with great liberality, placed at the disposal of the Council a number of copies of an illustrated work by himself, entitled "*Crania Typica*."

The Council have observed with pleasure that the committee appointed by the British Association for preparing anthropological instructions for travellers and other observers have completed their labours, and have published a volume of "*Notes and Queries on Anthropology*," which cannot fail to prove of great value. The Council gladly acceded to a suggestion from the committee that the Institute should be the medium of distributing copies of this important work among persons likely to furnish useful observations on the subjects with which it deals.

On the motion of Mr. WORSLEY, seconded by Mr. CHARLES-WORTH, the Report was adopted.

* Paid subsequently to Audit.

The PRESIDENT then delivered the following Address :—

THE PRESIDENT'S ADDRESS.

GENTLEMEN,—In accordance with annual custom, I rise to offer some brief observations on the principal additions, so far as I have been able to collect them, which have been made to anthropological and ethnological science since our last anniversary.

What I have to say will, however, be very discursive and superficial; for in the limits to which, on such an occasion as the present, I must necessarily confine myself, it is impossible to embrace more than a small portion of what has been effected in such an extensive branch of inquiry, or to do more than cast a very hasty glance at those matters which have seemed most worthy of notice amongst the greater multitude which must be omitted altogether.

As on the last occasion, I shall on the present divide what I have to say under the heads of—

I. Ethnography, including the languages, manners, customs, and psychical and moral characteristics of different races or populations.

II. Prehistoric or Priscan Archæology—the materials for studying the relations and conditions of the human race in Time.

III. Anthropology, properly so termed, or the Natural History of man regarded in a zoological sense, including his psychical characteristics.

IV. General Works or Essays relating to Ethnological subjects.

I. Under the first of these heads, the number of communications made or published during 1874, in our own assembly or elsewhere on the Continent, does not appear to have been large; but amongst those which have fallen under my notice are some of considerable interest and importance.

Amongst the papers under this head communicated to the Institute, I would first notice Mr. T. G. B. Lloyd's "Account of the Beothucs," a tribe of Indians, now stated to be extinct, which formerly inhabited Newfoundland. Mr. Lloyd's paper

is of particular interest, as conveying, besides the results of his own observations, the substance of a "remarkably interesting narrative of an expedition undertaken in the year 1768 by a Captain John Cartwright," and entitled "Remarks on the Situation of the Red Indians of Newfoundland, with some Account of their Manner of Living, &c., taken on the spot." This narrative, as consulted by Mr. Lloyd, was in manuscript, and appears never to have been printed.

A paper by Dr. Reid, on the "Mixed or Half-Breed Races of North-Western Canada," is a valuable contribution, though brief and fragmentary, from an actual observer, towards our knowledge of the gradual changes, physical and psychical, which ensue upon the mixture of blood between the European and a native savage race—a subject to which very great importance attaches in the attempt to trace the source of the peculiarities of different races of mankind. Mr. Taplin's remarks on the "Mixed Races of Australia" should also be mentioned in connection with this subject; but as his observations are chiefly founded on philosophical grounds, and limited to the native races alone, their interest arises from a different source.

One of the most important of the communications laid before the Institute in the past year, in ethnography, is Professor Owen's paper on the "Ethnology of Egypt." The author's object in this memoir is, as he says, to assist in the determination of the "local origin and physical characters of the race which initiated administrative government, ethics, religion, arts, and sciences in Egypt, and the period of such initiation, which," as he very truly observes, "is an aim of more than ordinary interest in anthropology." It may also, perhaps, be added, that the problem thus stated is one of extreme difficulty and obscurity, and has hitherto defied, in great measure, the attempts which have been made towards its solution.

The method adopted by Professor Owen to determine, so far as may be possible, the physical characteristics of the various populations that have from priscan times occupied the Nile Valley—viz. by regarding the types represented in the statues and other figures of the ancient kings and princes, and of the individuals represented on the walls of tombs and temples, and on the covers of sarcophagi, is one which has been before em-

ployed, and is undoubtedly calculated to lead to some conception of the general physical characteristics of the classes thus represented. But it is, perhaps, open to consideration whether, since, for the most part, these individuals must have belonged to the higher and dominant classes of the community, their effigies can be confidently regarded as affording satisfactory evidence as to the character of the great bulk of the population, which, so far as can be judged from pictures of processions, or of occasions on which large crowds were assembled, appears, from the earliest times of which any record remains, to have been as much mixed as at the present day.

One point upon which the author appears to lay considerable stress, relates to a suggestion made some years since by Professor Huxley, in a "Sketch of the Geographical Distribution of the Chief Modifications of Mankind," that the aborigines of the Nile Valley might, like those of the Deccan at the present day, have belonged to a distinct great division of mankind, of which the existing Australians now constitute the extreme type. But in the paper just referred to, I do not understand Professor Huxley to say or to imply that any of the Egyptian races of which we have any means of judging from statues or pictures ever resembled the existing Australian, except in the character of the hair, dark chocolate colour, and dolichocephalic skull, &c. And it should be recollected that the races of which we have any actual knowledge must have been removed from the primordial inhabitants, to whom I presume Professor Huxley's remark was intended to apply, by incalculable ages of time and great vicissitudes of events, and have thus become subjected to great admixture of foreign blood. Granting for a moment that the Australioid type really represents one of the earliest branches or stocks of the human race, the others being the Negroid, Mongoloid, and the so-termed Caucasian or Xanthochroid, or as it might, perhaps, be conveniently termed, the Japetoid—I see no reason to regard Professor Huxley's notion respecting the primitive inhabitants of the Nile Valley, so far as to their belonging to that type rather than to any of the others, as at all improbable, or as altogether disproved by the evidence and arguments adduced by Professor Owen. The primitive Egyptians were clearly not Negroid or Mongoloid, nor were they

Japetoid, although admixture with the first and last of these types may be perceived amongst them. There is, however, another way of viewing the subject; for, admitting it to be highly probable that the four above-mentioned divisions roughly represent very early divisions of the human race of which we have any knowledge at all, it should at the same time be remarked that there is a fifth type, which may, I think, fairly be regarded as of equal distinctness with them—viz. the Melanochroic, or Dark Whites, of Professor Huxley, but which he himself regards, though with some doubt, not as a distinct type, but as one arising from intermixture between the Xanthochroic and the Australioid. It is open, therefore, to consideration whether the more highly developed forms amongst the ancient Egyptians might not have belonged to this Melanochroic branch, and have descended from an original but ruder stock of the same kind.

In a paper by Professor Lauth, of Munich, read before the Anthropological Society of that city in 1870, "On the Human Races (represented) on Egyptian Monuments," it is stated that a picture at Thebes proves that at the time of Sethosis I., the father of Rameses II., or Sesostris, in the fifteenth century before Christ, a canal existed between the Nile and the Red Sea; inasmuch as it represents that Pharaoh bringing numerous Asiatic prisoners across the canal, attended by his nobles and officers. Amongst these figures it is said that four distinct races may be discerned, viz. Egyptian (Redhu), Asiatics (Aamu), Negroes (Nehasiu), and Libyans (Thamehu), each race being characterised by well marked peculiarities in colour, countenance, hair, clothing, arms and ornaments, as well as by tattooing, which is visible in one-fourth of the figures. "A cursory glance," Professor Lauth observes, "through the many thousand years of Egyptian history, shows that these four races, representing, as it were, four regions of the world, had been in contact for more than 5,000 years without losing their special characteristics."

The Libyan (Berber?) race was brought into subjection by Menes, and was again subdued by Nechetophys, the head of the third dynasty. And at the end of that dynasty Snefru is found on the peninsula of Sinai, as a conqueror over the

Asiatics, whilst on the Pyramids blocks of Syenite were and are to be seen, proving that Syene and Nubia had already been subjected to the Egyptian yoke. But anthropological evidence exists of a still earlier commixture of the black and red races. The great Androsphynx, near Gizeh, is older than Cheops; but in it may be perceived the prominent lips of the negro, which are also evident in the portrait of an Egyptian king in the Munich collection. In the sixth dynasty the Ethiopians appear in fact to have been dominant in Egypt, and the last member of that dynasty, Queen Nicotris, is described by Manetho as blonde, or fair; and the Fellahs, at the present day, it is said, tell of a ghost, in the form of a white woman, which haunts the environs of the third pyramid.

The Hykskos, in the fifteenth dynasty, drove the Egyptian king back towards Ethiopia, and, consequently, after they had been in their turn expelled, Amoses I. is found to be accompanied with a negro spouse, Nofretari, who appears to have left traces of her blood in the subsequent monarchs down to Amenophis III. (Memnon), who reigned 1600 years before the Christian era. That monarch married a Semitic queen, and their descendants consequently, and especially Rameses II., or Sesostris, exhibit the Hebrew nose, which was even transferred, in the course of the long reign of Sesostris, to the divine images. His son Menephthah, the Pharaoh of the Exodus, fought successfully against the Libyans and their allies—Etruscan, Greek, Sardinian, Sicilian, &c.—although he was unable to prevent the exodus of the Hebrews.

In a subsequent paper Professor Lauth points out the wonderful resemblance in the existing population to the monumental and sepulchral sculptures and paintings. From these indications Professor Lauth deduces the following characteristics of the ancient Coptic race, and which it bears to the present day:

1. A red complexion in the men, and lemon yellow in the women; finely-formed extremities, and slim and slender trunk; narrow and moderately high forehead; skull dolichocephalic; face oval; hair straight or wavy; eyes deep-set; eyebrows thin and slightly curved; opening of eyelids almond-shaped and slightly oblique; eyes and hair dark-brown or black; nose symmetrical, and almost continuous with the retrocedent fore-

head, wide inferiorly, and somewhat hooked, but not truncated; the upper lip rather long, the angles of the mouth abrupt; no molar prominence; neck slender; thorax an inverted cone—the rather long arms consequently appear to stand out from the trunk; hands small; fingers slender; legs slender; feet narrow, the second toe parallel with the first, and occasionally of the same length. In the monumental figures the ears are represented as being placed unusually high, but they are not so placed actually in the mummies. The incisor teeth are conical, and much worn on the crown, a condition, according to Pruner Bey, still to be observed in the existing population.

Together with this older and more delicate type, a younger and more robust form may be observed, which dates from the invasion of the Hyksos, and the consequent flight of the Pharaohs towards Ethiopia. Professor Lauth refers to the negro admixture thus caused, the darker complexion and more robust form, as well as the different-shaped skull, and its proportion to the face, characteristic of so many private mummies belonging to this period. The features generally, nevertheless, retained the Caucasian type. The bulk of the rural population—the Fellahin, which, perhaps, represents most really the most ancient Egyptian type—represents it at present perhaps more in general corporeal habit than in features, which is easily explainable by the conditions attaching to their long subjection and ill-treatment. The higher ancient characters appear to be more distinctly retained in the less mixed Coptic Christians than in the general bulk of the people, which, nevertheless, presents, according to Professor Lauth, a very distinctive type, readily traceable in the ancient figures, and explicable by the mixture with a Semitic race on the one hand, with a fair-haired and blue-eyed race coming from the west at a very remote period, and with the Ethiopians on the south.

In the "*Zeitschrift für Ethnologie*," a notice is given of what appears to be an interesting and important work on the ethnology of Australia, published at Adelaide, and entitled "*The Dîyerie Tribe of Australian Aborigines*," by S. Gaston (edited by G. Isaacs, 1871), which contains, to judge from the notice, a very full and complete account of the manners and customs, together with a description of the dialect and a voca-

bulary of an aboriginal tribe of natives now rapidly becoming extinct.

II.—PRISCAN ARCHEOLOGY.

Amongst the various contributions to this department of inquiry presented to us during the past year, I would briefly notice—

I. The second part of a paper by Mr. Consul Hutchinson, "On Explorations amongst Ancient Burial Grounds, chiefly in the Sea-coast Valleys of Peru."

The priscan history of America, and more especially, perhaps, of Mexico, Peru, and Chili, and the adjacent countries of South America, has always been a subject of the greatest interest to ethnologists; and since the publication of Mr. David Forbes' paper on the "Aymara Indians of Bolivia and Peru," read before the Ethnological Society in 1870, the subject may be said to have peculiarly attracted the attention of our members.

Mr. Hutchinson's communications, therefore, coming as they do from one so long personally acquainted with the country, and imbued with great zeal and talent for such explorations, cannot fail to be extremely interesting and valuable, if only as confirmatory, or the reverse, of the observations and conclusions of previous inquirers. As an instance of this, I may notice the circumstance of the occurrence of grinding-stones, or querns, in sepulchres almost at the level of Lima, or at a height of under 3,000 feet above the sea—an occurrence which appears to have been regarded by Mr. Forbes as characteristic of the sepulchres of the Aymara Indians, which are found at an elevation of at least 10,000 feet. Mr. Forbes ingeniously suggests that, owing to this great elevation, the Aymara Indians were unable to cook their pulse and Indian corn in its entire state, and that consequently they had recourse to the crushing of it. But this theory would seem to be disproved by Mr. Hutchinson's discovery of the same kind of querns at the comparatively low elevation of about 2,000 feet, and under conditions which, as he remarks, render it extremely improbable that the implements could have been conveyed from one locality to the other simply for the purpose of depositing them in the sepulchres. But that the races were cognate is shown, with tolerable certainty, by

the circumstance that both Mr. Forbes and Mr. Hutchinson state that the position of the body, and the mode in which it was sewn up in cotton cloth, is that which the infant occupies in the womb. This circumstance, however, might perhaps be as well accounted for by the reason that the posture in question is one in which a human body, admitting of flexion, can be packed into the smallest compass, as by regarding it as in any way designed to represent a return to the universal mother. With respect, however, to this latter notion, it is curious to remark that Cicero states that the oldest form of interment was that described by Xenophon as the mode in which Cyrus was interred, whose corpse, it is related, was deposited in the earth in the same posture as that in which the *fœtus* lies in its mother's womb.

A remarkable fact pointed out by Mr. Hutchinson, who states that from latitude 6° to 18° S., a coast distance exceeding 1,200 miles, he met with precisely the same types, both in the works of art and form of skull, adding the curious remark, well worthy of attention, that much of the pottery found in these Peruvian "*huacas*" bears an exact resemblance to that excavated by Dr. Schliemann from the supposed ruins of Troy.

A short paper by the late Mr. Tyrwhitt Drake, "On a Collection of Skulls and Stone Implements from Palestine," is, in fact, a notice of a very miscellaneous assemblage of objects apparently of widely different ages, and adds but little, if anything, to our previous knowledge of such things in the Holy Land.

Other communications on, or exhibitions of, stone and other implements of prehistoric antiquity brought before the Institute in the past session are—

1. An exhibition of stone implements, mostly of quartzite, and collected by himself in Labrador, in the sites of deserted Indian dwellings, was made by Mr. Lloyd.

2. Mr. Brent exhibited a small collection of worked flints, of the palæolithic period, from the gravel beds of Canterbury, Herne Bay, &c. In noticing these specimens, Mr. Brent attempted to show reasons for considering that the implements from Canterbury were of older date and ruder workmanship than those found on the coast; and, in Mr. Frank's opinion,

some of the specimens exhibited might probably be referred to the neolithic period, so that it would seem likely that remains of widely different epochs may be expected to occur in deposits formed by the degradation of sea cliffs, in which objects of different ages may have originally lain at widely different levels.

3. Notes by Sir John Lubbock on the "Discovery of Stone Implements in Egypt," in which he expresses the opinion, in agreement with that of MM. Hamy and Arcelin, that the stone implements, of which numerous specimens were exhibited, really belong to the stone age, and are ante-Pharaonic.

4. In Mr. Pennington's "Remarks upon Cremation and Contracted Burials, as exemplified in Interments of the Neolithic or Bronze Periods in Derbyshire," one of the most interesting conclusions to which the author has been led is, that "in the Derbyshire district everything leads to the conclusion that although contracted burial *may* have been customary a little earlier than the mode of burning bodies, yet that both methods were adopted by the same races, and that the neolithic and bronze peoples alike used both."

I would also draw attention here to an excellent paper by C. Grewingk, in the "Archiv f. Anthropol.," on the 'Archæology of the Eastern Baltic Provinces and Russia.' Briefly stated, the author's observations lead to the conclusion that, as regards the eastern countries bordering on the Baltic, and the adjacent parts of Russia, Livonia, &c., there was no period precisely corresponding with the older stone period of Worsaae, or at any rate that its existence cannot be proved, either from material evidences of early culture, or by geological data. The absence, or extreme rarity, of the remains of the larger mammals, such as the mammoth, rhinoceros, cave bear, hyæna, reindeer, &c., in Southern Scandinavia, Finland, and Livonia, &c., and especially in the small caverns in the Devonian sandstone of Livonia and Courland, appears to indicate that during the drift period this region could not have been fitted for the existence of man.

As regards the period at which such a change of conditions took place as might have rendered this region habitable, M. Grewingk takes, as affording some means of judging, the thickness of the calcareous layers or tufaceous deposits, which in some places are found to attain a thickness of eight feet, as at

Lobenstein. From an estimation of the rate of deposit of these layers, the period since they began to be formed may, he thinks, be put at about 5,000 years.

In all the above countries, and even far beyond them, he remarks upon the complete absence of dolmens, cromlechs, and the like structures, the easternmost situation of any example of the kind being probably the Grabstätte, at Seefeld, in the province of Dantzic. Another well-marked character of the later stone period, viz. Pfahlbauten, is also entirely absent.

Although polished stone implements, more especially of flint, are very rarely met with in the Eastern Baltic region, stone and iron implements occur mixed together, and commingled with Roman coins of the first, second, and fourth centuries, and some even so late as the ninth to the eleventh, instances of which latter have also been met with in Finland. The author concludes, therefore, from these and other considerations, that the same Slavish population has been continuous from the stone to the iron and recent periods. In Livonia he thinks the stone period was coincident with the bronze age of the more westerly countries, but that there was, during the bronze period, little communication between the populations of the East and West Baltic, so that it has left scarcely any traces, in consequence of which the transition from the stone to the iron age is, as it were, apparently sudden and abrupt. This transition M. Grewingk considers to have taken place about the first century A.D., whilst, according to the Danish archæologists, the bronze age in North Germany, Denmark, Norway, as far north as Drontheim, &c., extended from about 800 to 100 or 200 before Christ.

In the same part of the "*Archiv*" is a paper by Dr. Hartog Heys v. Zouteveen, on the question 'Whether America was known to the Phœnicians and Carthaginians.' The proofs adduced in support of the affirmative are—

1. The ruined cities in Central America, which exhibit pre-Aztec characters, and are obviously of vast antiquity. And upon these ruins, sculptures interpreted to represent elephants' heads are observed, as are also indications of two races of man of distinct types.

2. The Phœnicians and Carthaginians were undoubtedly

acquainted with a land of some kind beyond the Pillars of Hercules, which it is not impossible may have been America. One of its characteristics was that it had navigable rivers.

3. He adduces the case of the so-termed Onondaga statue, found in the State of New York, which exhibits strong Phœnician characters.

M. Mortillet describes two new caverns in which remains of human workmanship and skeletons have been found—one in the south-west of France, and the other at the north-east extremity of Switzerland. The former, which was explored by M. Louis Lartet and M. Chaplain-Dupare, is situated at Sorde, near Peyrehorade, on the borders of Bearn and the Basque country. The contents of the cavern, which belongs to the polished stone period, were, besides implements—all of stone or bone,—thirty human skeletons.

Amongst the stone implements were some of great beauty and high finish. One, in particular, was a lance-head not more than three centimetres wide at the base, although sixteen centimetres long. The base is triangular, and the point fine and tapering. The sculpture is as if made *à coups de gouge*, and the back presents an acute ridge, so that the section is triangular, whilst it is polished on the opposite side, and the edges finely serrated. Nothing is said about the character of the human remains.

The Swiss cavern is situated at Thaigen, in the Canton of Schaffhausen, and it is of particular interest, as being only the third palæolithic cavern hitherto discovered in Switzerland, and even one of these—that of Salève—is, more properly speaking, in France, that is to say, in Savoy. The most interesting relic procured in the cavern of Thaigen appears to have been an admirable specimen of the figure of a reindeer engraved on a reindeer's horn. The execution of this work of art is so fine, that some Englishmen to whom it was offered refused to purchase it, thinking it must have been a modern forgery. There can be no doubt, however, M. Mortillet observes, that it is genuine. Together with this were found flint implements of the Madeleine type.

In addition to these, M. I. de Baye gives an account of certain grottoes in the valley of Petit-Morin, in Champagne. Of these

grottoes, which are found scattered on the hill-sides, usually in the neighbourhood of streams or springs, about 120 have already been discovered. Independently of their contents, these little excavations appear to be of very considerable interest. Some seem to have been used as habitations, whilst others were of a sepulchral nature only. From the marks remaining on the sides it is apparent that the excavation was made with stone implements.

In some of the grottoes figures partly human, and supposed to represent divinities, were observed. Enormous quantities of stone implements of all kinds were found, and, amongst other things, rounded fragments of the human skull, some perforated, which had apparently been worn. One curious circumstance remarked by M. de Baye was that the skulls were often found to contain a variety of shells and small bones, such as the vertebræ and ribs of infants, which there is reason to believe could not have been introduced, except designedly. Two vertebræ were found, with flint arrow-heads sticking in them, and another had been pierced by a square-ended flint or chisel, whose supposed use as a projectile appears thus to be confirmed. The number of arrow-heads found in these caverns, and especially in the sepulchral ones, appears to have been enormous; and the fact seems to be evident that they had been the immediate cause of death in most instances, and had been interred with the corpse of the victim. Besides stone implements, there were found vases, and instruments of bone, collars, shells, and other ornaments.

Dr. V. Hölder (*Archiv.* vi. 4, p. 89), in the Anthropological Society of Wurtemberg, made some interesting remarks on the so-called race of Canstadt of M. de Quatrefages; a collective name under which that distinguished anthropologist, in the first part of his "*Crania Ethnica*," has included all the human skulls found in the lower quaternary deposits, and amongst these, one which was said to have been disinterred, some time in the last century, near Canstadt, together with numerous bones and teeth of the mammoth and other large mammals. Dr. V. Hölder's remarks apply only to the Canstadt skull, and from what he says, and the authorities he cites, there appears to be no ground for assuming that the skull in question, even if found

at all in the site stated, had anything to do with the mammalian remains supposed by M. de Quatrefages to have been associated with it. And the history of this "find," as Dr. V. Hölder remarks, "shows how, even in science as in history, legends may spring up from a very small germ." For it would seem that although the skull was placed in the same case with the bones and other remains exhumed at Canstadt in 1870, there was no ticket upon, nor any apparent reason why it should have been so placed, seeing that in the original accounts of the excavations at Canstadt by S. Reissel in 1700, and by J. A. Gessner in 1749 and 1753, not only is no mention made of the skull, but it is expressly stated that *no human bones* were found. At any rate, as numerous remains of the Roman and Merovingian periods were met with in the same locality, there is no apparent reason why the skull should, even if found there at all, have belonged to the more ancient rather than to the later period. I may, in addition, remark that this Canstadt skull has been as unfortunate in its fate as it was uncertain in its origin, having, I believe, been demolished, during the siege of Paris, by a Prussian shell.

M. Broca, at a meeting of the Anthropological Society of Paris on 19th June, 1873, offered remarks on "Some Ancient Macrocephalic Skulls from the neighbourhood of Tiflis," which he refers, without doubt, to the bronze period. One of the three skulls exhibited on the occasion was of normal conformation; the other two were more or less artificially deformed, as were most of the other skulls found in the sepulture. The deformation, from the brief description given of it, appears to have been of the usual macrocephalic character, so fully described by V. Baer.

Although it took place in July, 1873, the account of a very interesting discussion in the Anthropological Society of Paris, on the subject of "Tertiary Man," does not appear to have been published till 1874, and I may, therefore, perhaps venture briefly to advert to it.

The question of the existence of worked flints in the tertiary marls of Thenay, which has so long occupied M. l'Abbé Bourgeois, and upon which opinions have been so long and so strongly divided, as was shown at the Brussels meeting of the

Congress of Archæology and Prehistoric Anthropology, was reopened by M. Mortillet, on the occasion of the discovery of further specimens of worked flints by M. l'Abbé Bourgeois, two of which were described by M. Mortillet as of especial interest, as being, perhaps, the best marked specimens yet found in the locality in question. The more curious and beautiful of these two specimens presented the form of a kind of lance-head or, rather, of an oval saw, the edges of which were very regularly chipped. This is in the Museum of St. Germain. The second specimen was a kind of scraper, of a form which has not unfrequently occurred in the Thenay beds, but it was much larger and more neatly made than those which had been found previously.

M. Mortillet entertained no doubt as to the artificial character of these implements. The question, as it seemed to him, was whether the artificer was human, or an ancestor of the human race; and he appears to have arrived at the conclusion that he or it, was more probably not an actual man, but, as M. Mortillet terms it, "*une autre espèce d'homme*," perhaps even of a distinct genus. The ground upon which he assumes this is, that all the other mammalia of the Calcaire de Beauce belong, almost without exception, to extinct genera, and that there was no reason to conclude that the representative anthropoid form constituted an exception to this rule. It appears to be extremely desirable that the question of the supposed artificiality and age of these miocene flints should be definitively settled one way or the other.

A very interesting communication on the 'Origin of the Knowledge and Use of Bronze in Europe,' by Prof. Unger, is given in the "*Mittheilungen*" of the Göttingen Anthropological Society (a new Anthropological periodical edited by Dr. H. v. Ihering). In this valuable paper the whole subject is almost exhaustively treated. Prof. Unger's conclusions appear to be in accord with those, I believe, most generally entertained, viz. that the use of bronze was introduced into western and northern Europe by the Indo-Germanic or Aryan invaders at the end of the stone period. The paper is one well worthy of attentive perusal, and it will be found to afford copious references to authorities. The various modes of sepulture in the

stone and bronze age are also touched upon at considerable length.

At the special meeting of the Institute, which was held last July, in the Bethnal Green Museum, Colonel Lane Fox read an extremely interesting and instructive paper "On the Principles of Classification adopted in the Arrangement of his Anthropological Collection."

The extent and value of Colonel Lane Fox's collection of "objects illustrating the development of prehistoric and savage culture" is well known to all members of the Institute, and, in fact, to all who take an interest in the subject of primitive culture, and will now become still more widely known to the public at large. I have, therefore, no occasion to dilate upon its importance, and have only to express the very high sense we must all entertain of the instructive discourse in which Colonel Fox explained the principles upon which it has been arranged, and which serve to indicate very clearly the successive steps in which "development of specific ideas, and their transmission from one people to another, and from one locality to another," has taken place.

III.—ANTHROPOLOGY PROPER.

Madame C. Royer, in the course of some observations on the "Origin of the different Human Races," remarks upon the circumstance, that in Europe the great majority of infants are blonde at birth, and that the reverse is never, or but very rarely, observed. She thence deduces the conclusion that this is owing to atavism, and may be considered as a proof that the aboriginal Europeans were universally a fair-haired race. Madame Royer, however, further makes the very ingenious remark, that although the almost universal occurrence of fair hair in European infants is an indication of their descent from fair-haired ancestors, there is another circumstance which would tend to show that this fair hair was not characteristic of primordial man—viz. that even in the fairest-haired infants the true hair is in most cases preceded by a fetal down, with which many children are born, and which is of a deep black colour, very sparse, and, if not woolly like negro hair, is flocky and in tufts, as in the lower Australian races.

These ingenious speculations of Madame Royer appear to me worthy of some attention, as are many others, extravagant as they may at first sight be deemed, contained in her very clever and suggestive memoir. Were her facts as well established as her speculations are attractively stated, Madame Royer's paper would be as instructive as it is now interesting. But this cannot at present be affirmed of them.

In the department of Craniometrical Contrivances, the number of inventions during the past year appears to have been unusually small; at which we can scarcely wonder, seeing the number of such appliances already in existence. The only one that has come under my notice is that described by Herr J. W. Spengel, in the "*Mitth. d. Göttinger Anthropologische Vereine*," and which appears to have been contrived chiefly with a view of carrying out Prof. v. Ihering's views on the subject of craniometry, upon which I commented in my last annual Address. Herr Spengel's apparatus seems to me to be extremely and needlessly complicated, and, consequently, very expensive, its price being about £9. I cannot perceive any use for such expensive and cumbersome contrivances for the simple purpose of measuring the skull, which, with very little ingenuity, can just as well be carried out by very ordinary instruments. But as, on the last occasion of my addressing you, I entered at some length into this subject, I need not go into it again on the present occasion.

According to M. Topinard, expressed at the end of some very sensible remarks upon the "*True Value of Craniometry in the estimation of the Racial Character of Skulls*," the proper method to pursue in craniological inquiry is—

1. To take the presumed characters belonging to the first and second order, one by one, and classify the means into as many series as possible of all races, in an ascending and descending series, and to take these series as homogeneous and numerous as possible.

2. To determine those series which include the greatest number of common characters, and may consequently be regarded as representing a type or distinct race; and to distribute these types or races in natural families, as in other branches of natural history.

3. To take up each of the races thus determined, and by analysis to ascertain the divergences or variations, and consequently its constituent elements.

It is only, as he says, under these conditions that we can proceed to an anatomical classification of races; and it is only in this way that we can take an individual skull—or a small number of skulls—and say in which class it should be placed, or in what proportions it may be constituted from different sources. He, however, omits to state what he regards as characters of the first and second order respectively, and yet this is one of the most important points, and one upon which anything but uniformity of opinion exists.

With respect to the true horizontal plane of the skull, M. Topinard, I am glad to see, if I read him rightly, is of the opinion I have always held, and stated in my Address last year, that the true plane in question is one parallel to the axis of vision, and he also maintains, as on that occasion I pointed out, that this plane is also parallel with M. Broca's condylo-alveolar plane, and, he might have added, with V. Baer's plane of the zygomatic arch. Is not this, at any rate, one of the fundamental points upon which all craniologists might definitively agree?

In a second communication M. Topinard descants upon the characters afforded by the proportions of the *nose*. These, he says, must not be estimated sentimentally, but under strict rules of mensuration; and for the guidance of travellers he states the following as points to be attended to:—

1. The greatest height or length.
2. The greatest breadth.
3. The degree of projection from the base.
4. The form and direction of the nostrils.
5. The general outline of the organ.

In the sixth volume of the "*Archiv f. Anthropol.*," Dr. C. Aeby has a very long and exhaustive, and extremely valuable, paper on 'Microcephaly,' illustrated with numerous figures. In treating of this subject Dr. Aeby devotes a long chapter to the differences between the male and female skull, as determined from Swiss specimens, which will be found replete with information of the most precise character. I do not perceive that his conclusions differ from those at which most of us had, in a

more vague way arrived, but it is satisfactory to have such a body of reliable evidence in support of our conclusions. I may observe, however, that, from his observations, Dr. Aeby does not agree with Ecker and Welcker and those who assert that the female skull is distinguished, by a comparatively less altitude and breadth, from the male; nor with Weissbach, who considers the female skull to be higher and wider.

Dr. Adolf Bernhard Meyer, in the "*Mittheilungen d. Anthropol. Gesellschaft*" of Vienna, gives an interesting account of the external characteristics of the Papuans of New Guinea—intended, as I am glad to see, to be merely the precursor of a complete anthropological description of the race, which will embrace its psychical peculiarities, craniological characters, habits, and language.

Dr. Meyer commences his observations by some general remarks as to the present distribution on the earth's surface of the Papuan race, in which, it may be said, he includes as varieties the Mincopies or Negritos of the Andaman Islands, the Aetas of the Philippines, the Semangs of Malacca—of whom, however, at present we have scarcely any knowledge—and the Kalangs of Java. The general external characters of the race are a dark complexion, varying from a sort of dusky copper colour to black, and woolly hair. The skull in some—as the Andamanese, for instance—is brachycephalic, but in the greater number of instances, as in those of New Guinea, dolichocephalic. Notwithstanding this difference, Dr. Meyer disagrees with M. de Quatrefages, who regards the Mincopies and Aetas as having no relationship whatever with the Papuans of New Guinea.

The localities in which Dr. Meyer's observations were made are—1, the islands to the north of New Guinea, Mafoor, Mysore, and Jobi; 2, the shores of the whole of Geelvink's Bay, in north-west New Guinea; and, 3, the interior of the country stretching from Geelvink's Bay to M'Clure Gulf, on the west coast of the island; and, lastly, in the Arfak Mountains in the north-west.

It will be seen, therefore, that apart from mere artificial distinctions, his observations relate to a pure and unmixed race of what M. de Quatrefages would term "true Papuans." For he remarks that there can be no question of any Malay intermixture in the north-west parts of New Guinea, although

supposed instances of such mixtures have been mentioned. Nor is there any difference observable between the mountain tribes and those on the coast, in which statement he differs from Mr. Wallace and others. Dr. Meyer then proceeds to describe the physical characters of the Papuans in the following order:—

- | | |
|-------------|-----------------|
| 1. Stature. | 3. Hair. |
| 2. Skin. | 4. Physiognomy. |

1. As regards stature, it has been commonly stated that the Papuans are a large race, especially as compared with the Philippine Negritos, and in the accounts given by travellers they are described as stoutly built, and as equal to Europeans in bulk. But Dr. Meyer's observations do not confirm this. According to his careful measurements the average height of the male Papuan of New Guinea is about 5.5, and of the female rather under 5 feet. Whence it would appear, that although the New Guinea Papuans are taller than those of Luçon (4 feet 9 inches), they are by no means gigantic. Dr. Meyer remarks, from his own experience, that travellers are apt to over-estimate the dimensions of men viewed without clothing, and under the unusual conditions presented by savages. Of this he gives some striking examples, showing the necessity of relying only upon accurate measurements. As regards dress and customs, Dr. Meyer relates that the *pudenda* are always perfectly concealed in both sexes, and that circumcision is unknown—a very important fact, when contrasted with the existence of that rite among at least some of the straight-haired Australian tribes. They are very active and indefatigable mountain climbers; and Dr. Meyer remarked that they had remarkable flexibility and prehensiveness, as it were, in the toes, not from any opposition of the great toe to the other, but from their general adaptability. It would be interesting, consequently, to know whether they are at all platycnemic.

2. As regards colour, Dr. Meyer's observations showed that the Papuans, though, on the whole, darker than the Malays, vary extremely in colour, from a comparatively light brown to a deep but always brownish black. And with reference to this I may mention that some forty years ago Dr. George Bennett brought over to this country a woolly-haired girl, of about ten

years of age, from New Guinea, whose hair and colour of skin were more of a dull copper tint than even brown. And he described this colour as being common among some tribes. The skin, contrary to the common report respecting the Papuans, is, in its natural and healthy condition, soft and supple, and not covered with rugosities, as stated by M. de Quatrefages.

3. With respect to the hair—Dr. Meyer's account of which and its peculiarities is very interesting—it does not appear really to grow in tufts like that of the Hottentots, but to assume that peculiar character only when it is allowed to grow long, and become, as it were, matted. In other words, it does not grow in tufts from the bottom, as in the Hottentots. The Papuans, and especially the males, appear to take great pains, and to devote much time, to the art of hairdressing. In infancy the hair is said to be almost always, as in Europeans, of a much lighter hue than that which it afterwards assumes. The hair on the rest of the body presents no remarkable difference from that on ourselves.

4. In their features or physiognomy no distinct or definite type appears to exist. The most various physiognomies may be observed amongst them, which Dr. Meyer finds it as impossible to define as it would be in Europeans. Some individuals present an arched nose and other features recalling the Hebrew type, whilst others are of a Malay cast, and others, again, of a more negroid character; whilst some, except for their colour, might be taken for ordinary Europeans. In proof of this, the paper is illustrated by several well-drawn portraits, not selected for any special purpose, but intended to represent the usual cast of features among the people. This diversity of feature among apparently so unmixed a race is a surprising fact, and one not easily explicable.

I am able to give but this very brief abstract of the contents of Dr. Meyer's interesting paper, which is well worth the careful notice of anthropologists, specially at the present time, when attention appears to be strongly directed to the exploration of the interior of a country which, perhaps, includes more of the unknown than any other part of the world of the same extent. Dr. Meyer's further promised contributions to the anthropology of New Guinea will be awaited with great interest by us all.

He is evidently a clear-seeing and altogether unprejudiced observer.

In a communication "On the Relations of Culture of the Ashantees," Mr. Hyde Clarke points out the curious circumstance of certain linguistic affinities existing between some West African tribes and the inhabitants of the Corean peninsula, and, more markedly, the Indian aborigines known as Kolarian, including Kol, Sonthal, and Mundara. Of these languages, he states that the Mundara proceeds very closely side by side with that of Houssa, so that the conformity of the languages is beyond all doubt; whilst, on the other hand, he finds an affinity between the Basque language and that of the Mandingo and Bambarra negroes.

The Asiatic affinities, if real—of which we can scarcely doubt, on the authority of so competent a linguist as Mr. Hyde Clarke—is a very remarkable phenomenon; but as regards the extension of the Basque so far south, it may, perhaps, be allowable to suggest that it indicates, not any race affinity between the Basques and Negroes, but that the language of the latter may have received some tincture through the Berber races now represented by the Cabyles of Northern Africa, who, from other considerations, were not improbably closely allied with the primitive Iberian race, or races, of which the Basques may, perhaps, be regarded as the modern representatives.

Of Mr. Hyde Clarke's "Researches in Prehistoric and Proto-historic Comparative Philology, Mythology, and Archæology in Connection with the Origin of Culture in America, and its Propagation by the Sumerian or Akkad Families," it is impossible for me here to give even a brief abstract. I would merely, in passing, remark that, in perusing this laborious paper, I perceive that Mr. Hyde Clarke is inclined to class the Eskimos, both in language and blood, with the Negritos of the Andaman Islands, and the Bushmen and other pygmean races of Africa and elsewhere. But this appears to me, from physical considerations alone, which are of far more importance than even the best-established linguistic characters, to be a view altogether untenable.

In a paper on 'Tattooing,' by W. Krause, in the "Proceedings of the Göttingen Anthropological Society," the author,

from the almost universal prevalence of this practice amongst all nations, suggests that such a circumstance might be regarded as indicating a common origin to the human race; but he concludes with showing that it cannot be thus interpreted. He remarks that ornamentation simply is not the object aimed at. The various reasons he assigns for the practice are—

1. Religious motives, as exemplified in the fact that the priests were chiefly so distinguished among the South Sea Islanders (in which, however, I believe he is much mistaken), and that negroes brand themselves on the arm with the figure of the fetish they may select as their guardian deity, &c. In many cases, however, he remarks, the practice may be merely a survival.

2. As distinctive of kings or chiefs, as was the custom among the Thracians, according to Herodotus, and amongst the Picts, according to Julius Cæsar. In these cases the practice is confined to the men.

3. As tribal marks, as among the North American Indians.

4. As a mere personal distinction, conveying in the figure of a weapon or animal, &c., the corresponding name borne by the individual.

5. As a sort of seal affixed to an agreement.

The author seems to think that tattoo marks sometimes disappear spontaneously, but this, in my opinion, is extremely doubtful.

Of other subjects, more or less directly connected with ethnological or anthropological science, upon which the Institute has received communications, I would more particularly notice Mr. Distant's paper on the "Mental Differences between the Sexes," which, however, should more properly have been entitled "On the Cranial Differences," seeing that Mr. Distant's remarks are, for the most part, directed to the differences observable between the male and female skull. His data, however, are derived apparently, not from original observations of his own, but from the labours of Dr. Boyd and Dr. Peacock, Professor Schaffhausen, Ecker, and others, and therefore can hardly be regarded as affording much addition to our knowledge on the subject, which, I may remark, has been so exhaustively treated in a laborious memoir by Dr. Aeby, in the "*Archiv f. Anthro-*

pologie," *apropos* of his comparison between the microcephalic and normal human skull.

As regards the differences in mental conditions between the sexes, or, as Mr. Distant expresses it, the "mental divergence between men and women," Mr. Distant appears to be in accord with nearly all previous writers, that it cannot be assigned solely to the comparatively small size of the brain in the latter, which may, perhaps, be merely a consequence of the smaller dimensions of the body generally, but to a variety of other causes, chiefly moral, emotional, or educational; and he expresses the hope, which appears, amongst us at least, to be in course of justification, that "as the race progresses the cranial capacity of the sexes will become much less distinct," and with it, I presume, he expects that the intellectual capacity will receive an equal development; in fact, speaking generally, I am not sure this consummation has not been already reached.

Under the head of "Miscellaneous Works relating to Anthropology," I would draw attention more particularly to a little book, entitled "Anthropological Notes and Queries," published under the auspices of the British Association, under the able editorship of Colonel Lane Fox.

The object of this work, as stated in the preface, is "to promote accurate anthropological observation on the part of travellers, and to enable those who are not anthropologists themselves to supply the information which is wanted for the scientific study of anthropology at home." The work itself is well calculated to carry out this object, and, as such, I have thought it my duty to bring its existence prominently before you. To use the usual words of a review, "it is a book that should be on the shelves of every anthropologist's library," and, it may be added, in the carpet bag of every traveller, where it will occupy but small space, and to whose owner it will on numerous occasions prove of the greatest possible interest.

Having thus concluded a hasty, but at the same time, I fear, a tedious survey of the labours of anthropologists during the last year, it only now remains for me to thank you, in the first place, for the patience with which you have listened to me, and, at the same time, to thank you still more warmly for the kindness and favour with which you have accepted the imperfect

services I have been able to render to the Institute during the two years I have had the honour of presiding over it. And, on the occasion of my quitting this chair, I may perhaps be allowed to say a few words on the subject of its present condition and future interests.

So far as our pecuniary condition is concerned, I can but congratulate you on a very great improvement, owing to the unexampled liberality with which the call of the Council upon the members for means to clear off our old incumbrances was responded to. This call, as you are aware, produced quite as much as was requisite for the purpose immediately in view; but to enable the Institute to take the position it ought and deserves to occupy, a far more ample revenue than that we at present enjoy is indispensably necessary. One of the more important objects of a society such as this is undoubtedly to afford a centre where the subjects upon which we are concerned may be discussed; nor can it be denied that these discussions are often of extreme value. But besides this, another and even more important, because a more permanent object, must be held in view, which is the publication of such communications as may possess a more than ephemeral value, and by so doing to add to the future progress of science. In our particular case, this publication is attended with considerable expense, without the incurring of which, papers depending greatly upon graphic representations must necessarily be curtailed in a most essential element. Again, from want of funds we are unable to maintain our library in a due supply of many works, more especially of reference, and of an expensive kind, which it would be highly desirable for us to possess, and which, in fact, ought to be found on our shelves.

I might also remark, that were we able to give a sufficient remuneration to a responsible editor, our Journal might be made the vehicle of a great amount of matter from extraneous sources, which, under present circumstances, it is impossible to obtain or arrange with the fullness and completeness which should be aimed at in a publication which ought to be able to keep the members of the Institute *au niveau* with all that is going on in anthropology throughout the world. The only apparent way in which this desirable addition to our funds can be looked for

is by an increase in the number of our members. As it is, though we cannot complain of any material diminution of our number, it certainly does not increase as it ought, nor so much as might have been reasonably expected, when the old and burdensome debt under which the Institute laboured had been cleared off. This arises, perhaps, in part from the circumstance that many of the subjects properly coming within the domains of Ethnology and Anthropology have been taken up by other bodies, such as the Geographical and Statistical Societies, and even, it may be said, by that of the Antiquaries. This cannot be helped, and, so far as science is concerned, is not even to be regretted, but I am convinced it has a tendency to diminish the additions to our numbers.

Another cause, which is intrinsically of less importance and naturally of a more temporary nature, may perhaps be sought in the absurd quarrels which have so long divided English anthropologists, and which are so well calculated to deter peace-loving men from joining what to them must appear a divided body. If all who take an interest in the natural history of the human race were in harmonious combination, there is no reason why the progress of anthropological science, so far as it can be assisted by co-operation, should not take as high a position in this country as it does anywhere else; but to effect this it is requisite that all should pull together with a will. At the present moment our forces, never very large, are divided. I have no intention of entering upon the history of this unhappy division—which is perfectly well known already, perhaps, to all present—but will merely remark, for the benefit of those who are not acquainted with the subject, and more especially of continental anthropologists, that the whole question, from the first splitting of the old Ethnological Society, to the second dissidence two years since, has been and is entirely of a merely personal character. No sufficient reason has at any time existed to justify a course so injurious to the interests of science; and I would more especially insist upon the point, that one of the principal reasons assigned for the separation, viz. that certain subjects or branches of inquiry were forbidden or slighted in this place, is altogether without foundation. All present are well aware of this, and I need only refer to our publications, which prove how comprehensive is

the range of subjects brought before us, and upon which at all times discussion has been as free as air, to show how perfectly groundless the allegation is. Nor can I perceive in the records of any society of anthropologists in France, Germany, Italy, or elsewhere, that any subjects beyond those which have, on different occasions, occupied our attention, have been discussed. Anthropologists throughout the world may be assured that no legitimate subject of scientific interest, within its scope and objects, will be refused admission by the Anthropological Institute, and that all assertions to the contrary are in direct opposition to fact.

Colonel LANE FOX said: Gentlemen,—A duty now devolves on me which I feel sure will be most acceptable to the meeting—viz. to ask you to return your best thanks to our President for the admirable Address which we have just heard, and, I may add, for the services which he has rendered to the Institute during his Presidency. You will, I am sure, think with me that this Address, containing, as it does, a *résumé* of all the principal anthropological events of the year, with his observations upon them, will form in itself a standard contribution to our science. I was one of those who, when we asked Mr. Busk to become our President, felt strongly that during the first infancy of our Institute, it was very desirable the chair should be filled by a gentleman of recognised European scientific standing and ability. The result has, I think, fully confirmed us in these anticipations. It has been mainly owing to Mr. Busk's presence in the chair that the Institute has been enabled to pass the resolution of which you have heard, by which the old debt of the Institute has been completely cleared off—a measure which was absolutely necessary in order to render the progress of the Institute possible, and which will greatly facilitate the labours of those who follow after him. During the two years that Mr. Busk has been President, scarcely a single meeting has taken place without his being present in the chair; and I need not tell those who have attended the meetings regularly how much he has contributed to the interest of our discussions by his speeches, and by the papers which he has read. For my part, I cannot but feel that in accepting the post to which you have done me the honour of nominating me, it will be difficult for me to worthily replace Mr. Busk. Still I feel that my exertions in your behalf will be facilitated by what he has done, and I am confident that I shall receive his support, and that he will continue to take an interest in the Society to which he has contributed so much. There are many other topics on which it may naturally occur to you that I might dilate when speaking of the services which Mr. Busk has rendered to the Institute since it was organised; but I feel sure that nothing which I can say will add in any way to the unanimity and the plea-

sure with which you will respond to the invitation I now make to you, and I will therefore conclude by simply asking you to vote, in the words of the resolution which has been handed to me, that the best thanks of the meeting be given to the President for his Address, and that it be printed in the Journal.

Mr. F. GALTON seconded the motion with very great pleasure, tempered, however, with no little regret that this Address was the last official act of our President, whose administration had been carried on with such rare ability and judgment, and spirit of conciliation.

Carried by acclamation.

On the motion of Mr. F. G. H. Price, seconded by Mr. Watson, the thanks of the members were voted to the auditors of the accounts.

The scrutineers then brought up their report of the ballot, and declared the following gentlemen were elected to serve on the Council for 1875 :—

President.—Colonel A. Lane Fox, F.S.A.

Vice-Presidents.—Prof. George Busk, F.R.S., John Evans, Esq., F.R.S., A. W. Franks, Esq., M.A., F.R.S., Francis Galton, Esq., F.R.S., George Harris, Esq., LL.D., F.S.A., Sir John Lubbock, Bart., F.R.S.

Directors.—E. W. Brabrook, Esq., F.S.A., F. W. Rudler, Esq., F.G.S.

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Thanks to the retiring members of Council and to the scrutineers were voted, and the meeting separated.

ANTHROPOLOGICAL MISCELLANEA.

THE NATIVE RACES OF THE PACIFIC STATES OF NORTH AMERICA.
By HUBERT HOWE BANCROFT. London: Longmans, Green,
& Co., 1875.

THIS is a work of unusual interest and importance. The first volume (the only one yet published) has recently been presented to the library of the Institute. It contains 800 pages of letterpress, devoted to a description of the "wild tribes" that inhabit the western half of North America, from Alaska to Darien, including Mexico and the Central American States. Four more volumes, it is announced, will treat of the manners and customs of the civilised nations, and the mythology, languages, and antiquities of the same region.

Mr. Bancroft's aim has been to gather and arrange in a systematic way all that is known of the peoples above alluded to. Much of the matter he has collected was previously either wholly unknown, or inaccessible to ordinary readers. With the aid of a staff of assistants, his mass of materials, derived from some 1,200 books, manuscripts, and pamphlets, has been classified, and the customs and characteristic features of some hundreds of tribes set down in regular geographical order. Copious quotations are given in the notes.

The author avoids speculation, believing that the work of a collector and of a theoriser are distinct. His motto is that facts are the staple of science. This much, however, forces itself on his belief, as a result of his labour, that the native races of North-western America differ amongst themselves only in minor particulars, and that they bear a general resemblance to the inhabitants of other parts of America. The index, which is in preparation, will, as the author says, double the value of the work.

J. P. H.

CAVE-HUNTING; *Researches on the evidence of caves respecting the early inhabitants of Europe.* By W. BOYD DAWKINS, M.A., F.R.S., F.G.S., F.S.A. Macmillan & Co., 1874.

IN this excellent work, Professor Boyd Dawkins has thrown into a well-digested form the crude mass of facts, bearing upon cavern researches, to be found in this Journal and elsewhere. The introductory chapter contains allusions to the legends connected with caves, and an outline of the history of cavern exploration in this country and throughout Europe. In the next chapter Professor

Dawkins describes the various ways by which caves may have been formed, and discusses the rate of the growth of stalagmite. The systematic description of caves commences with those which have been inhabited by man in historic times; and especial prominence is here given to the Romano-Celtic or Brit-Welsh stratum in the Victoria Cave at Settle. Incidentally it may be remarked that the committee appointed to explore the caves at Settle has recently issued a pressing appeal for funds to carry on their work. A brief notice of such caves as were used in the ages of iron and bronze leads Professor Dawkins to the caves of the neolithic age; here the Perthi-Chwareu and Cefn Caves naturally come in for detailed description. After discussing the range of the neolithic dolichocephali and brachycephali, the author passes to a notice of the pleistocene caves, giving a full description of the Wookey-hole hyæna-den. The succeeding chapters are devoted to a notice of the inhabitants of the caves of North-western Europe, and the evidence of the fauna as to the Atlantic coast-line; to a description of the fauna of the caves of Southern Europe, and the evidence as to the Mediterranean coast-line in the pleistocene age; and to a discussion of the probable character of the climate of Europe during the pleistocene period.

A copy of this interesting work has recently been presented to the library of the Institute.

AN INDIAN INSTITUTE.—Dr. Forbes Watson has published a paper on the Establishment of an Indian Institute for Lecture, Enquiry, and Teaching, in connection with the India Museum and Library. The author points to the influence which such an institute would be likely to exert on the prosecution of Indian studies in this country, and on the advancement of education among the natives of India. In the proposed arrangement of the museum and library prominence would be given to illustrations bearing on the ethnography of India. Whilst the natural resources of the country would be exhibited, the moral and material condition of the people would also be illustrated, special sections being devoted to ethnology, philology, archæology, mythology, &c.

MR. HOWORTH on the MONGOLS.—Mr. Henry H. Howorth, who has contributed several papers to this Journal on the ethnology of the Asiatic nomades, is writing a monograph on the Mongols, including their history from the earliest appearance of the name Mongol to the present day, and also a detailed account of their religion, manners, and customs, &c. It will probably be published in the course of the autumn.

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Fig 1

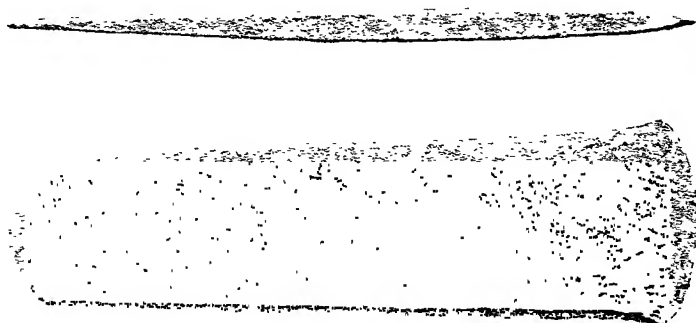


Fig 2



COPPER CELTS FROM BETH SAUR, PALESTINE

Scale $\frac{1}{2}$ linear

"A book that is shut is but a block"

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